AMMAIA II

The excavation contexts 1994-2011

CRISTINA CORSI

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With contributions by:
Vitor Silva Dias, Mario da Cruz, Elisabetta De Minicis, Emilia Gallo, Vincenzo E. J. Macchione,
José Carlos Quaresma, José Ruivo, Devi Taelman, Caterina P. Venditti, Frank Vermeulen

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INTRODUCTION

UNDERSTANDING *AMMAIA*: A HISTORY OF RESEARCH AND OF RESEARCHERS

Cristina Corsi

a Placing a “lost” Roman town on a map

The presence of ruins connected to an abandoned ancient settlement has been known in the area of the hamlet of São Salvador de Aramenha (in the Portuguese administrative system, it is defined as a *freguesia*, literally “parish”), in the municipality of Marvão, since the sixteenth century.

The place is quite remote, located as it is in the heart of the Natural Park of the Serra de São Mamede, a mountainous area of east central Portugal extending into the Spanish Extremadura (Fig. 1). The region, the northernmost of Alentejo (for this reason, named Alto Alentejo), is still very rural, with large agricultural estates and extensive preserved woodlands. There are several small towns but no big cities, and the population density is one of the lowest in Europe. Some small farms and large estates (called *quintas* in Portuguese) are scattered throughout the landscape. A large part of the sparse population still makes a living from agriculture, which is dominated by cork and olive plantations and pastureland. These activities are hindered by the many outcrops of granite, which means that the resulting soils are very shallow, making them relatively poor and mostly suitable for stock grazing (mainly cows) and cork and olive production.

The site lies in a mostly hilly landscape, near the river Sever, a tributary of the Tagus, which flows *c.* 40km N of Marvão.

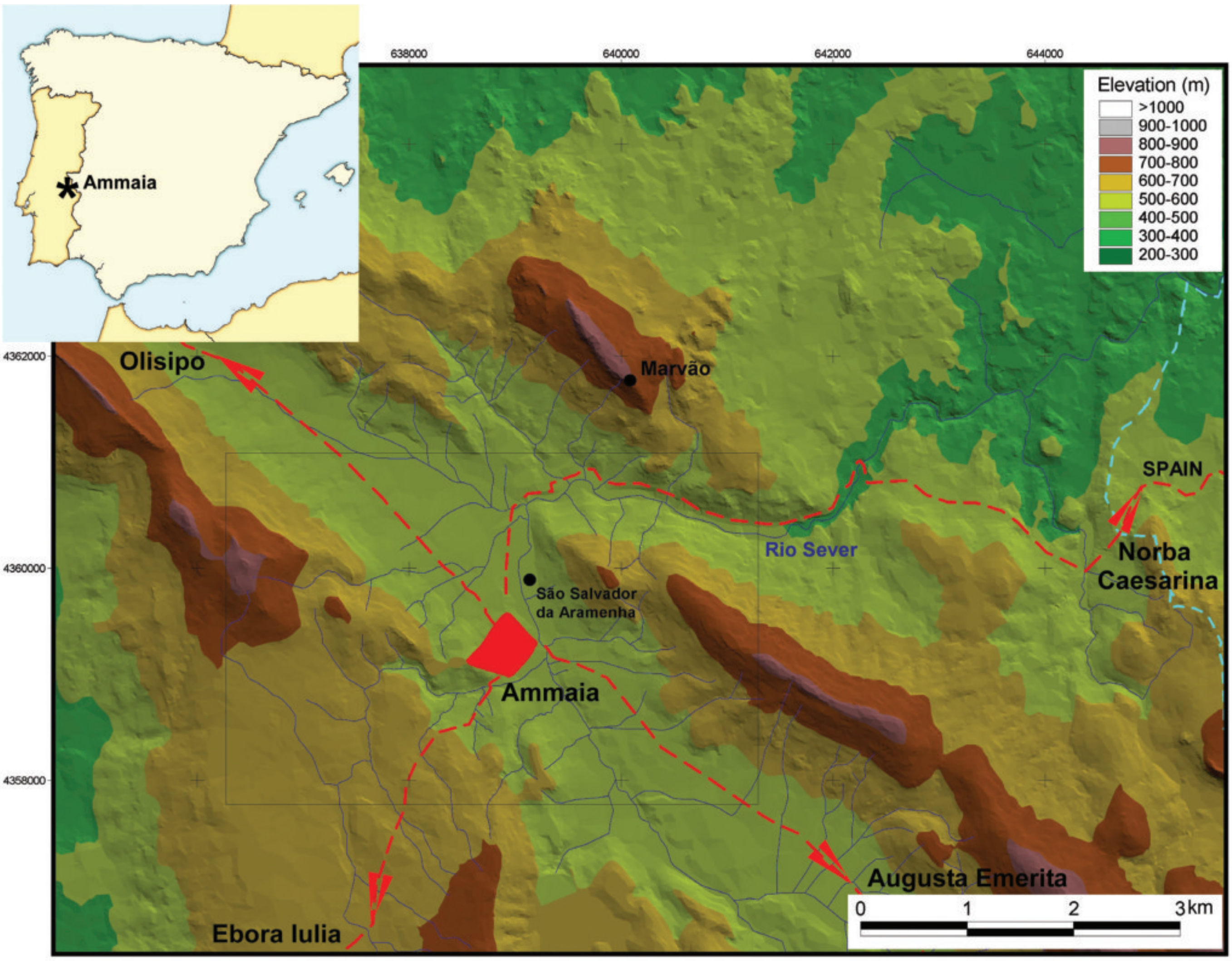

Fig. 1 General location of *Ammaia*, related to modern topography and Roman roads (elaboration C. Corsi after S. Deprez).

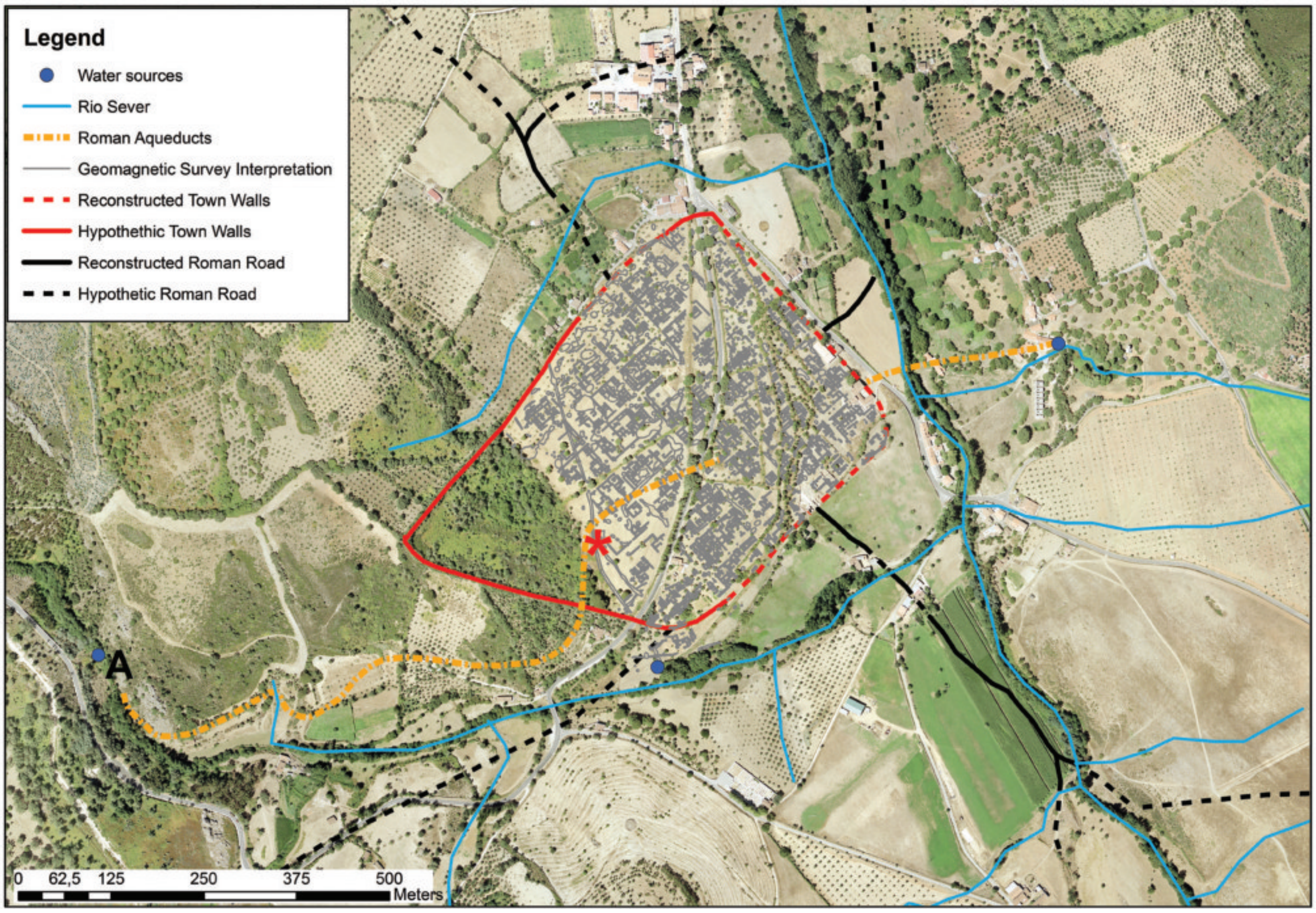

Fig. 2 Aerial view of the area of S. Salvador de Aramenha, with indication of the hypothetical limits of *Ammaia*, of the main water sources and of the reconstructed trajectories of the two Roman aqueducts, with indication of the collection point of the western aqueduct (A), and of the finding spot of a granite U-shaped block of a *specus* found inside the urban site (*) (elaboration C. Corsi).

This area is geologically dominated by quartzites and schists surrounded by an undulating, sometimes nearly flat, landscape of granites, resources which were actively exploited by the inhabitants of *Ammaia* (Taelman 2012: 21–22). Shale and sandstone also played an important role in the economy of the town (Vermeulen *et al.* 2012: 26–27). In addition to this, as already extensively analysed in other contributions (e.g.: Vermeulen *et al.* 2005; Corsi and Vermeulen 2008; Corsi, Johnson and Vermeulen 2012: 121-122; Corsi and Vermeulen 2012b: 4–5; Mantas 2012a: 13–14, 2012b: 262; Vermeulen, Corsi and Meyer 2012: 158–160), the choice of the location of the Roman settlement has been determined by its position along main road axes, connecting the capital of the *Provincia Lusitania*, *Augusta Emerita*, with other important towns and the Atlantic coast (see Fig. 1).

Furthermore, the abundance of natural water springs in the area, which also assured the long life of the Roman town, surely attracted settlement in the Roman period. The survey that we conducted in the surroundings of *Ammaia* (starting in 2001) revealed the presence of a Roman aqueduct, supplying water to at least the northern sector from the spring of the Ribeira dos Alvarrões, *c.* 1km W of the town, and of other water-collection structures *c.* 300m E of the Quinta do Deão, at Olhos de Agua, on the opposite side of the River Sever (Vermeulen *et al.* 2005: Vermeulen, Corsi and Meyer 2012: 162–163) (Fig. 2).

The area where the Roman town once extended can today be considered as a greenfield site: very few modern buildings lie above the ruins scattered in the areas now distinguished with the toponyms of Quinta do Deão and Tapada de Aramenha (Fig. 3). Among them, probably by the sixteenth century, some ruins next to the Southern Gate of the Roman town were arranged to create a *patio*, which - mistaken by some scholars for an ancient monument - is referred to in the literature as "*peristylium*"[1]. The most important, and still perfectly preserved, modern building is the eighteenth-century farmhouse called Quinta do Deão, which was transformed into the local museum after restoration work, including archaeological excavation inside and around the building (Fig. 4).

As we will see in detail below, the presence of extant above-ground ruins has driven traditional archaeological

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[1] In other occasions, these ruins have been interpreted as "Byzantine Houses" or even as a "*macellum*" when attributed to Roman times (e.g. Pereira 2009).

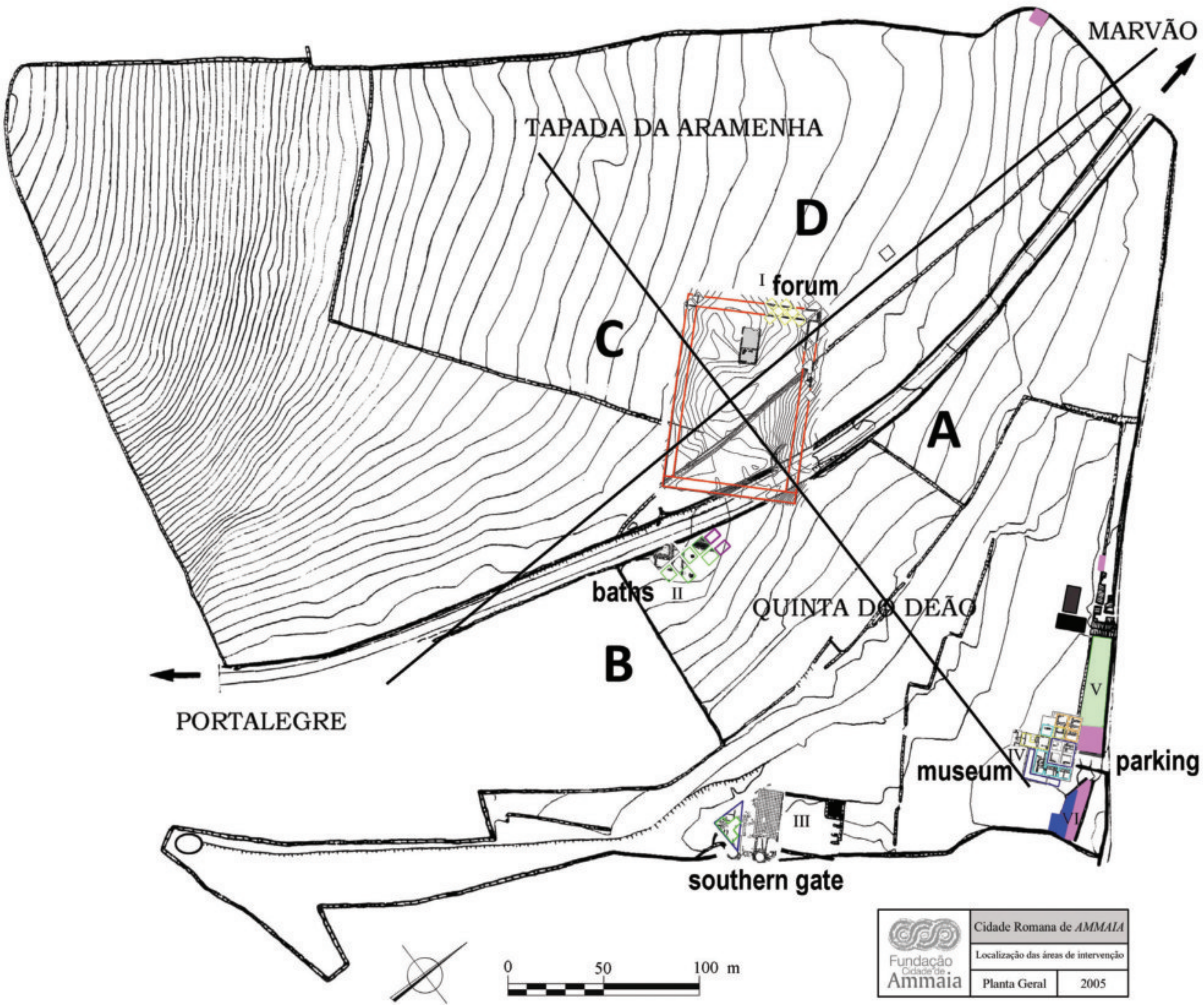

Fig. 3 São Salvador the Arameñha (Marvão). Delimitation of the area owned by the *Fundação Cidade de Ammaia* (divided in the parcels of Quinta do Deão and Tapada de Aramenha), including most of the intramural surface of the Roman town of *Ammaia*, with indication of the main excavated areas. Also the division in 4 sectors, astronomically oriented and named according to a clockwise order, starting from NE quadrant (© *Fundação Cidade de Ammaia*).

research in three main areas: the imposing Gate located at the southern edge of the town (therefore called *Porta Sul* in Portuguese), the area of the Forum, where the *opus caementicium* core of a temple podium marked the presence of the city's most important religious monument, and the Baths—the so-called "Forum Baths" because of their proximity with the town's monumental centre (see Fig. 3).

b From architectural disintegration to contemporary scientific interest

The gradual disintegration of *Ammaia* began in Late Antiquity and the ensuing early medieval period saw a complete

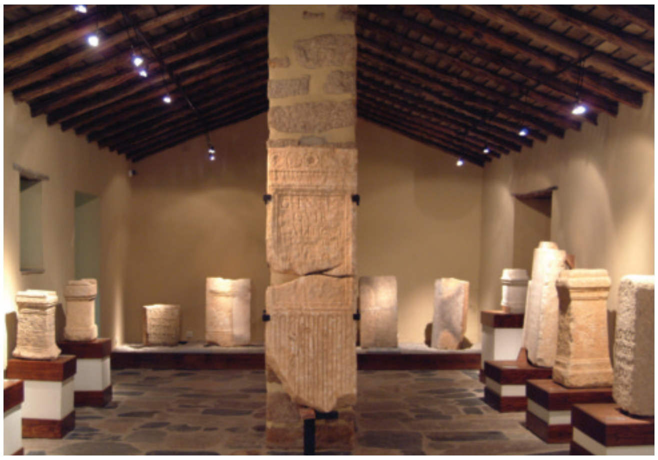

Fig. 4 The "hall of stones" (the epigraphic gallery) in the Museum of *Ammaia*, São Salvador the Arameñha (Marvão). The Museum is hosted in the eighteenth century farmhouse named Quinta do Deão.

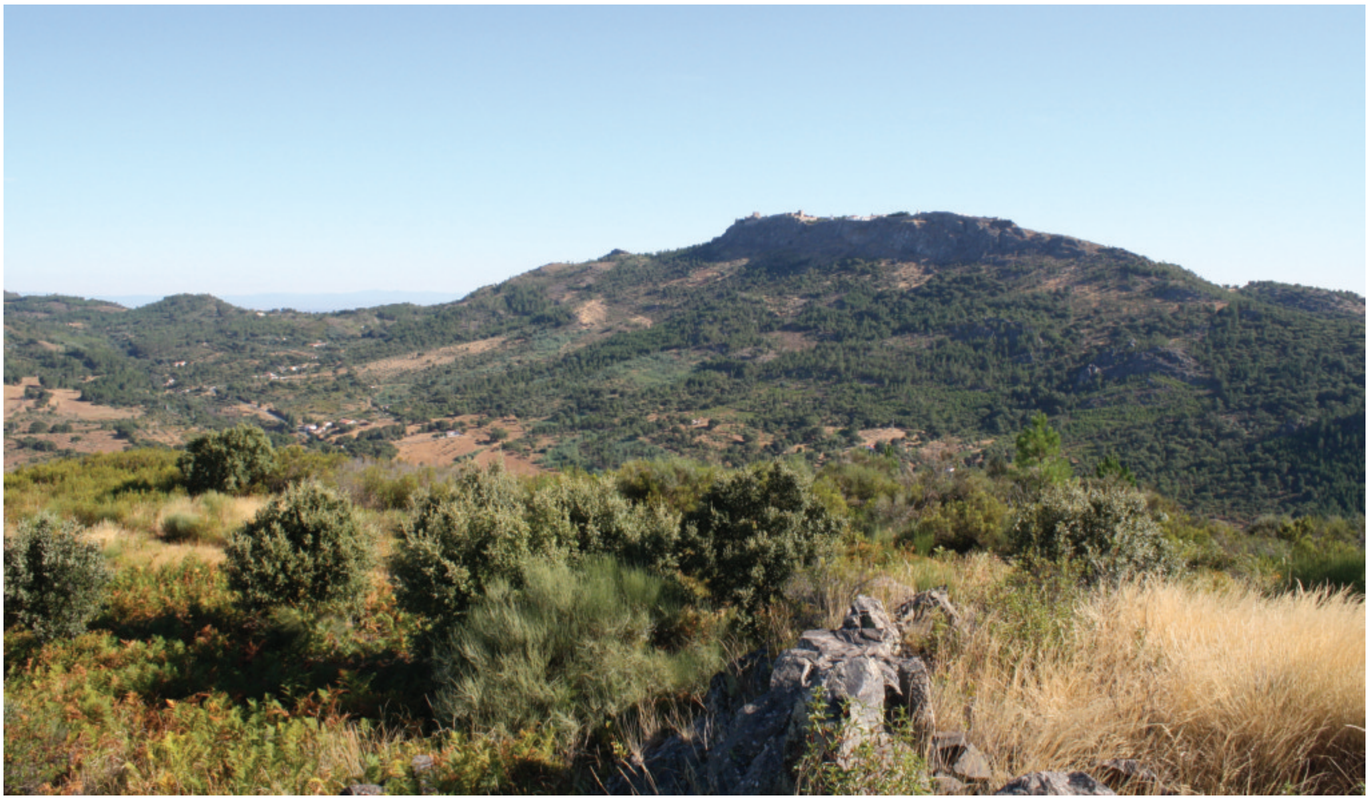

Fig. 5 View from S of the hilltop of Marvão.

abandonment of the once-flourishing Roman town whose remaining population must, at the latest by the ninth century, have moved to the well-defended Moorish hilltop site of Marvão (Fig. 5). The Roman town was systematically dismantled in the course of time by people from there and other hilltop towns in the region (such as Castelo de Vide and Portalegre), but mostly from the nearby village of S. Salvador de Aramenha and from a few post-Medieval farms and estates in the vicinity. Most material was reused as common building materials while some "nice old stones", such as statuary, an arched gate (*Porta Sul*) and columns, were recycled in a more decorative way.

Indeed, scholars and local historians were aware that many of the building materials used in some palaces and in the town walls of Portalegre, Castelo de Vide and Marvão were "found" in the area (Arrais 1589; Souto Maior 1619[2]). As already mentioned elsewhere (see, e.g., Vermeulen 2012), in 1710, the so-called Arco da Aramenha—the stone archway which was the core of the entrance of the Southern Gate—was brought to Castelo de Vide, where it stayed in use until 1891 as a decorative part of the wall circuit of the village (Coelho 1988; Stylow 2009; Mantas 2010b).

Actually, until deep into the nineteenth century, many still-visible ruins of the ancient town must have attracted the attention of antiquities hunters, especially the area of the Forum (Tapade de Aramenha) with its more monumental architecture which would have inspired hopes of valuable finds, which was the scene of un-documented digs (Sidarus 1991; Oliveira, Fernandes and Olívio 1996: 15–22; Mantas 2000: 391–394; Pereira 2009: 23–36; Mantas 2010b, 2012a). Also, several of the public inscriptions found on granite or marble blocks and studied in the past decades by several specialists (Jalhay 1947; IRCP 1984; Mantas 2000, 2002, 2012a) might have originated from the Forum area. If the oral information from older inhabitants of S. Salvador de Aramenha is correct, even deep into the twentieth century many granite blocks from the Forum temple and steps, as well as slabs originally paving the Forum square, were moved away from their original locations.

Little remains or is known of the early years of "treasure hunting" within the Roman town: for instance, we are informed by the Spanish scholar D. José de Viu that in 1852 around twenty marble statues were unearthed in *Ammaia* and shipped to England[3]; only one stayed in Portugal, where it remains in the Museum José Régio di Portalegre (Oliveira 1991).

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[2] Diogo Souto Maior saw the pedestal with the dedication by the *Ammaia* citizens to the emperor Lucius Verus (IRCP, no. 616) in the Ermida do Espírito Santo in Portalegre, and he therefore wrongly proposed to identify *Ammaia* with Portalegre.

[3] Twenty marble statues were sold to the Robinsons, an English family involved in the cork trade who were based in Portalegre and who occupied the Quinta dos Olhos de Água, just opposite the river Sever: *Relatorio* 1998–2002: 7.

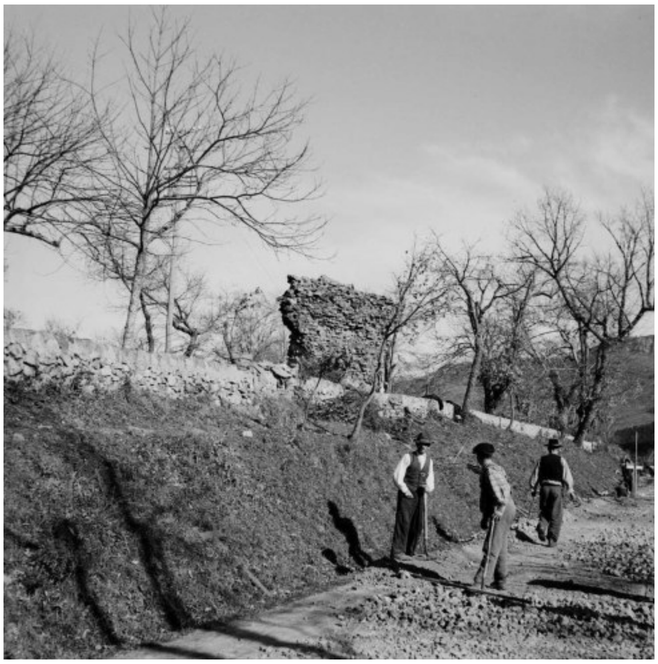

Fig. 6 Construction works, during the 1920's, of the road Marvão-Portalegre, with in the background standing remains of the Forum basilica.

We can follow the construction of the Collection "António and Delmira Maçãs" through the study of the correspondence between Leite de Vasconcelos and António Maçãs, landowner and small industrialist of the municipality of Marvão, who in the first half of the twentieth century resided in Portalegre. Mainly composed of funerary objects, this collection was built by Maçãs who, though he had no academic background and was guided and advised by his friend Vasconcelos, acted as an experienced art dealer and bequeathed the collection, now preserved in Lisbon, to his daughter Delmira (Oliveira and Cunha 1993–1994).

As discussed elsewhere (most recently by Vermeulen 2012), it was only in 1935 that the above-mentioned famous scholar José Leite de Vasconcelos determined the provenience of an honorific inscription dedicated to the Emperor Claudius (IRCP 615) and identified the Roman remains of S. Salvador de Aramenha as those of *Ammaia* (Vasconcelos 1935). These ruins were until then wrongly attributed to the other Roman town of *Midobriga*, because of a misunderstanding generated by an erroneous reading of the list of towns contributing to the construction of the bridge on the Tagus river at Valencia de Alcantara (Alarçao 1988).

It was another fifteen years before the identification brought about the acknowledgement of the scientific importance of the site; in 1949 it was classified as National Monument (decree no. 37450), but no significant measures to protect and valorise the site were taken before the Foundation was instituted and the transactions for the purchase of the land was initiated (in 1997).

In the first half of the twentieth century, further plunder and damage were perpetrated against the site, the worst of which was possibly the construction of the national road connecting Marvão to Portalegre (Fig. 6).

It was only in 1994 that Jorge de Oliveira (University of Évora) started the first "modern" archaeological work, with the unearthing of some structures at *Porta Sul* (the so-called *sector 1 – estrutura c*) and the first reconstructions of a few columns in the area that later would be called the "peristylium" (*sector 1 – estrutura a*, see *supra*, note 1)[4], where the wall then named *estrutura b* of the *sector 1* was also recorded.

In 1994, the topographic survey was also started; in 1995 the first large-scale topographical map of the area of the archaeological site was made, divided into the two parcels of Quinta do Deão e Tapada de Aramenha (see Fig. 3).

In 1995, the first "cleaning" operations were carried out around the podium of the Forum temple, and in 1996, activity also began in the area of the Baths (see chapters I.1, II.1).

In 1998, Vasco Gil Mantas of the University of Coimbra assisted Jorge de Oliveira in the coordination of the excavations, and, from 1999 to 2006, played the role of main coordinator of fieldwork, while in 2003 Filipe Themudo Barata began to represent the University of Évora in the consortium. In the years 1998–2000, activities were concentrated in the investigation of the archaeological evidence under the building of the Quinta, which was restructured to host the newly established on-site museum. Already in 2001, two temporary exhibitions were opened in the building, the first was a monographic presentation of the site, the other, organised in collaboration with the National Museum of Archaeology in Lisbon (M.N.A.), presented the history of research and especially the role played in the research on *Ammaia* by António Maçãs and Leite de Vasconcelos (*supra*, *Relatorio* 2003: 5–6).

In the early 21st century, archaeological excavations were concentrated in the area in front of the Museum, where the construction of a parking area was necessary to open the site to the public, and also continued in the area of the Southern Gate (see chapters III.1-3).

In 2006, when excavation activities slowed, the excavated sectors where organised into an archaeological park, where the demarcation of the perimeter of archaeological area was determined on the basis of the land ownership of the *Fundação*, and not on the supposed boundaries of the Roman town (see Fig. 3).

The brief report of these activities, like the reports of the following 10 years, is contained in yearly "*relatorios*" which the *Fundação Cidade de Ammaia*, the institution established in 1997 in charge of the management of the site and the administration of the funding, submitted to the Portuguese Institute for archaeological and geological research (now known as IGESPAR). These reports are the principal, sometimes the only, records available to reconstruct the old excavations which we present here. They are quoted as "*Relatorio* year" but unfortunately they are not accessible to the public.

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[4] As we will see later in detail (chapters III.1, III.3), this structure has been interpreted as a *macellum*, and sometimes it is referred to as such in the reports.

Several papers and preliminary excavation reports have been published by the archaeologists who were part of the team, but (with few exceptions), these publications are inaccessible to most researchers, as they are contained in locally distributed journals and magazines. Among them, we can mention the report by Sofia Borges of the excavation at the Baths (Borges 2002)[5]. In 2009, Sergio Pereira, one of the field archaeologists, published a monograph focused primarily on the excavation at the Southern Gate (Pereira 2009), another excavation report (Pereira 2011), and a report venturing into general interpretations of the history of the site (Pereira 2010), while the wider archaeological map of the municipality of Marvão has been presented in Oliveira, Pereira and Parreira 2007. The same authors have relatively recently published other papers (e.g.: Oliveira 2010; Pereira 2010, 2011), but they do not discuss the latest achievements in the last six years of fieldwork at *Ammaia*.

The topographic setting and the first division into sectors

In order to start a more systematic excavation approach of the site, in 1996 the research team divided the whole site area into four sectors (A, B, C, D) by two perpendicular axes, astronomically oriented N/S and W/E, with their central point at circa 20m S of the temple podium (see Fig. 3). In each sector, a grid of 5-by-5m squares was numbered in units of 100. The numbers are preceded by the letter of the sector to which each particular trench belongs.

This letter was indicated on almost all of the tags of the finds boxes and it is therefore one of the few elements that can be used to trace the provenience of materials. Unfortunately, the division is not efficient as the most important excavation areas (the Baths and the Southern Gate) both fall in sector "B", while the "squares" of the Forum are spread over three different sectors (A, B, D).

c The last years: a "third" life for *Ammaia*

In the autumn of 2007, on invitation of Prof. Jorge Araujo, former rector of the Universidade de Évora, Frank Vermeulen and Cristina Corsi, who have collaborated on the *Ammaia* project since 2001, together with their colleagues, collaborators and students from the Belgian Ghent University and the Italian University of Cassino, took over the scientific direction of the archaeological site of *Ammaia*, in association with the Centro Interdisciplinar de Historia, Culturas e Sociedades (CIDEHUS) of the University of Évora.

The first steps taken following the "master plan", which was presented at the end of the same year, were the re-activation of the research and laboratory activities on the site, and the elaboration of several proposals for national and international funding calls.

Both these targets involved the establishment of important international partnerships and of strong collaboration with other teams of specialists in different fields, with the ambitious goal of making *Ammaia* an international centre for research and innovation in archaeological survey.

The successful applications for national and international funding brought extraordinary scientific and financial resources to *Ammaia*.

The most important projects which were, or still are, "based" in *Ammaia* are:

1) The EU funded FP7 project *"Radiography of the Past*[6]*,* short-named *"Radio-Past".* In this project four academic partners (the Universities of Évora, Ghent and Ljubljana and the British School at Rome) and three Small Medium Enterprises (7Reasons – Austria, Past2Present – the Netherlands and Eastern Atlas – Germany) pooled their resources in order to develop integrated approaches to studying different urban sites (mostly Roman) and to search for effective ways in which to present their results to a wider public (van Roode *et al.* 2012).

In other words, the Radio-Past project first sought to integrate different methodologies in the widely developed field of non-destructive survey technologies as applied to archaeology. But it has also pursued the validation of the results through innovative methods of visualisation and the development of strategies for the efficient management of the cultural heritage sites studied. The idea was to develop a standard set of survey approaches, based on a series of already widely used methods as well as more innovative methods, such as active low-altitude aerial photography, geophysical prospection, light detection and ranging (LiDAR) surveys and geomorphological observations, which can, in the future, be used efficiently in a comparable and integrated way on a wide range of complex sites in Europe.

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[5] This paper and several others have been published in the journal "Ibn Maruán. Revista Cultural do Concelho de Marvão" published by the municipality of Marvão, which is accessible online at the webpage: http://www.cm-marvao.pt/pt/informacao-periodica/revista-cultural.

[6] This project (GA 230679) is part of the Marie Curie/People IAPP 2008 program (see the project website: www.radiopast.eu). The title of the project was meant to point at the possibilities of producing a sort of "X-ray" images of buried archaeological sites without carrying out excavations, but only making use of the tools and approaches framed – to stick to the similarity with medical sciences - under the definition of "archaeological diagnostics". See, most recently: Corsi, Slapsak and Vermeulen 2013.

Furthermore, the project also targeted the development of effective scientific systems for the dissemination of survey results. In particular, the combination of high-resolution fieldwork with computer-based means of mapping and data visualisation allows the virtual reconstruction of buried towns or large settlements within a relatively short space of time. This is opposed to the more traditional excavation-centred approach where it can take generations before a broader view of the site becomes available. Indeed, it is essential that specialists can disseminate this knowledge to the wider public by means of efficient and imaginative communication systems and that they find ways to make visitors experience the "invisible" ancient settlements still hidden under their feet.

The partners selected several "test sites" where they gathered to cooperate in fieldwork, experimentation and training activities. *Ammaia* was chosen in the framework of this project as the main 'open-lab' of the consortium. The Radio-Past project was launched in April 2009 and terminated on 31 March 2013.

The publication in 2012 of the first book of this series, *Ammaia I. The survey*, edited by C. Corsi and F. Vermeulen, represents one of the most important outcomes of this project.

2) The second project was entitled: *"The Ammaia project. A concerted action of archaeology, natural sciences and applied technologies to place a Roman town in context",* financed by the Portuguese National Fund for Research (FCT)[7]. In this enterprise, the main partners with UEvora (here represented by the research centres CIDEHUS and HERCULES) were the Department of Electrical Engineering and the Institute for Systems and Robotics (ISR) of the Instituto Superior Técnico (IST) in Lisbon. The foremost objective of this project was the creation of opportunities to transfer knowledge and to validate developments and innovation in the methodology of archaeological surveys. One of the priorities of this project was the development of a new 'low-budget' system for high-resolution low-altitude LiDAR scanning. Another priority was to investigate further possibilities in the automation of certain types of field survey, such as geophysics. This project, which lasted for three years, was launched in 2010. The present book can be considered as the most important deliverable of this project.

3) Another very important collaboration has been established in the framework of the *Projectos transfronteiriços bilaterais* of the *Rede de Investigação Transfronteiriça Extremadura-Centro Alentejo* (RITECA), with the Instituto de Arquelogia de Mérida. The project entitled "Revalorizaçaõ do património arqueológicos: a aplicação de técnicas de análise não destructivas" intends to extend the data acquisition and the experiments done in the last few years by our team to other "neighbouring" geographical contexts and to broaden the approaches applied to this specific field of research, experimenting with new techniques, exchanging experience and expertise.

Starting in January 2013, Carlos Gonzales Fabião of the University of Lisbon took over the scientific direction of the site, steering the main focus of fieldwork back onto excavations. The need for re-working the stratigraphical datasets of excavated sectors and to refine the chronological sequence of the history of the town has brought the Lisbon team to re-open the excavation at the Southern Gate, where excavation was undertaken in September 2013. In this way, the *Ammaia* project is guaranteed a future at the highest international level, where field and laboratory research will be continued and paralleled with an enhanced site-management strategy.

d Integrating survey and excavation

Following the theoretical approaches which served as the inspiration guiding the above-mentioned projects, the fieldwork in *Ammaia* under our direction has been mainly focussed on an integrated, multidisciplinary survey rather than on extensive excavations. Excavations were meant mainly as "ground-truthing" or as a field check of what has been hypothesized on the basis of the interpretation of the survey.

As was presented in detail in the first book of this series (Corsi and Vermeulen 2012a), the quantity and the quality of the information that we have been able to retrieve about *Ammaia* and its *suburbium* from the survey is simply impressive. Importantly, we have been able:

- to trace an hypothetical wall circuit around the town,
- to individuate the urban grid of the flattest part of the intra-mural area,
- to determine the plans of many buildings and to integrate the plans of those only partially known through excavation,
- to understand the function of most of the still-buried buildings and, in several cases, to reconstruct their architectural features and some peculiarities of their urban settings,
- to identify the water-provisioning system,

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[7] Official denomination of this FCT project is: FCOMP-01-0124-FEDER-010492 (PTDC/HIS-ARQ/103227/2008).

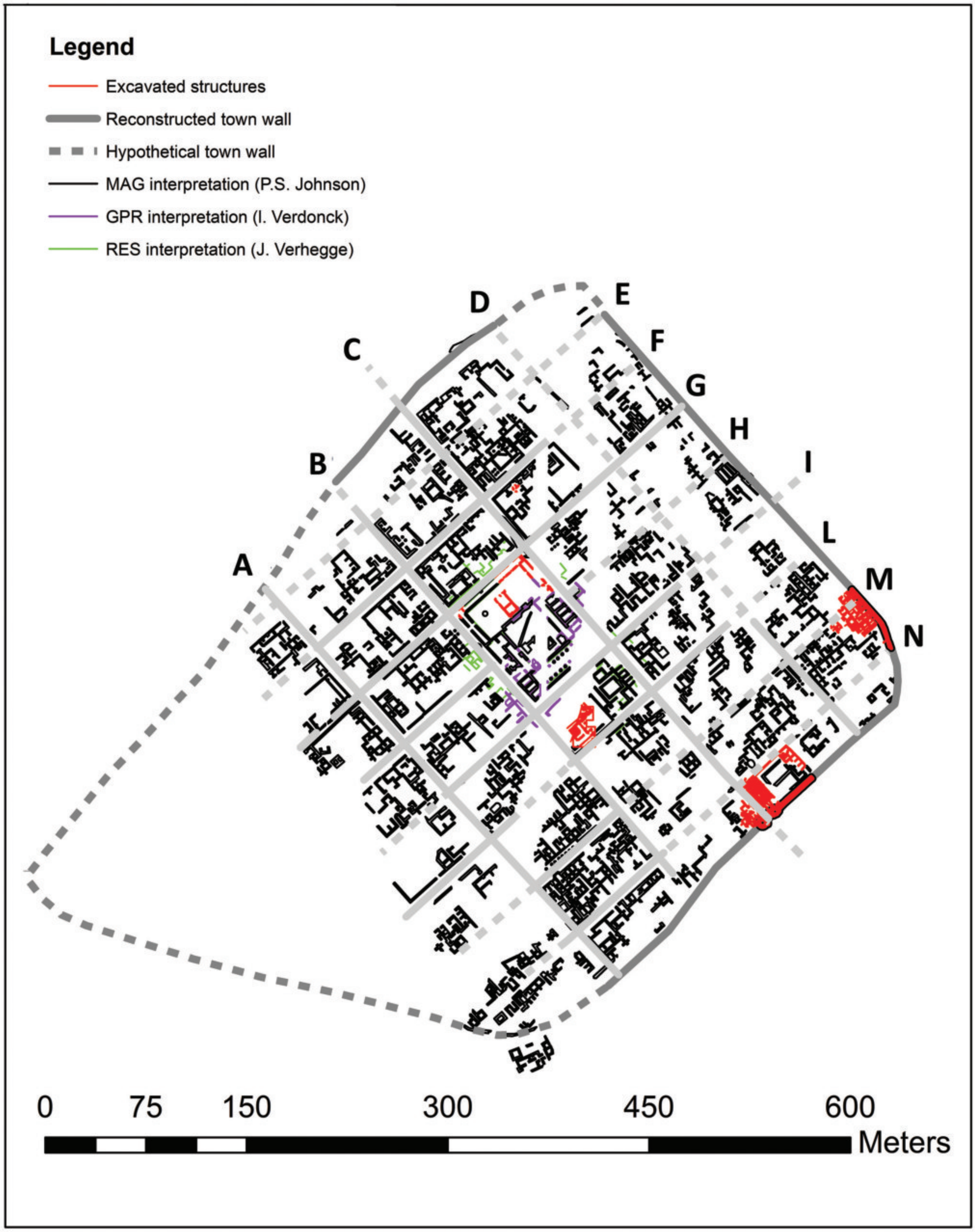

Fig. 7 Map of the excavated areas and of the integrated interpretation of geophysical survey with indication of the schematic layout of the street network (elaboration C. Corsi).

- to understand the relationship between the intra- and extra-mural areas,
- to individuate several areas for the procurement of raw materials,
- to sketch the modes of geomorphological evolution of the site and its post-depositional processes.

To summarize the achievements to which we will often refer to in this volume, we can say that, mainly through the magnetic survey, we have been able to delineate the layout of that part of the intra-mural area which we think was occupied by buildings, whilst the south-western "tip", constituted by the slope of the Malhadais hill, would have been included in the wall circuit for strategic reasons, but would have been too steep for building purposes (Vermeulen *et al.* 2005, Corsi 2012b).

In the urbanised areas, then, the street grid was arranged orthogonally, based on at least four NW–SE-orientated (these lie at almost exactly 45° to north) parallel axes (the so-called *cardines*)[8], crossed by at least eight (possibly nine) perpendicular streets (the so-called *decumani*) (Corsi 2012a: 139–144) (Fig. 7). This orthogonal street system organised the town into a total of 44 roughly rectangular building "blocks"[9].

It has been demonstrated that this street-network implied a certain "hierarchy" of the axes. The starting point of such analysis is the identification of public areas, where social contacts would have been facilitated. These "locations" were afforded the greatest social significance, and they were therefore positioned along the main thoroughfares in the street network: for example, the paths that a newcomer was most likely to traverse, or the open public spaces the town inhabitants would have frequently used in the course of daily life (Paliou and Corsi 2013: 7).This quantitative and computational approach offers also insights into social aspects of human movement and interaction in ancient built environments, exploring the related social, ritual and symbolic aspects of human mobility. Few experiments have been carried out on ancient towns of which street grids and layouts are known mostly by means of geophysical survey (Benech 2007, 2010; Morrow 2009; Kaiser 2011: 194; Stöger 2011; Paliou and Corsi 2013: 8).

Among the several methodologies elaborated in the course of the last 20 years, in *Ammaia* a Space Syntax analysis has been performed using Depthmap, a software developed at University College London. It showed that the NW–SE axes (the so-called *cardines*) have high degree of centrality when compared to the SW–NE streets (the so-called *decumani*; Paliou and Corsi 2013: 9). This might indicate that NW–SE streets were more important for channeling movement and transportation through the town (see Kaiser 2011: 55–56). When overlapping these results of network analysis with the topographic measurements it is clear that the urban network was laid in such a way so that the NW–SE streets were parallel to the contour lines, in this way significantly facilitating pedestrian and vehicular traffic. In this analysis it is also possible to identify the streets that a visitor would have more likely passed along, especially when arriving from the provincial capital *Augusta Emerita* and entering through the Southern Gate (Paliou and Corsi 2013).

A full array of methods, approaches and techniques has been deployed and experimentation, testing, integration, and technological and methodological enhancements have been achieved. Considering the consistent scientific publications already produced, we will not dwell here on these aspects but we will emphasise that most of our knowledge about "underground" *Ammaia* has been mainly achieved through the extensive and intensive integrated geophysical survey.

In recent years, the discussion on the relationship between excavation and survey for the study of an archaeological site monopolised the discussion in many scientific fora, and in some case the two approaches have been seen as "antagonistic" (Vermeulen and Corsi forthcoming). In general, when comparing the two types of information, gathered with geophysical survey and excavations, we have to note that "modern" excavations, because of the time-consuming procedure of stratigraphic excavation and recording, can only provide information on a rather restricted area (even if offering detailed data about the architecture and the material structures, their characteristics, the stratigraphy, the chronology, the finds with their archaeometric data), and "in terms of spatial analysis, the archaeologist generally proceeds by extrapolation" (Benech and Hesse 2007: 183). This means that excavations does not facilitate the study of the variation of occupation density and of the settlement patterns, while geophysical survey can provide "rich and detailed information which allows a good understanding of the spatial organisation of archaeological structures and of its "logic", and may permit placing it in an environmental context about which the geophysical map can also provide suitable information" (Benech and Hesse 2007: 183).

The question of occupation density can be discussed in greater depth, including, in particular, the factor of non-built areas, which might have played an important role in the organisation of space.

Of course, we must be aware of the fact that in most geophysical methods, such as the.most widely used methods of electric resistivity, magnetic and electromagnetic prospection, the two-dimensional plan achieved by drawing interpretative vectors of the geophysical results refers to the last level of occupation of the site, while a relative chronology can be sometimes obtained via the use of Ground Penetrating Radar (GPR). For this reason, excavation is a necessary complement to deepen and refine our understanding, implementing the factor of "space" with the one of "time".

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[8] We conventionally used the terms of *decumani* and *cardines* as useful shorthand to reduce confusion between NW–SE streets, the *cardines*, and SW–NE streets, the *decumani*, though aware of the fact that the use of this terminology is subject to an ample discussion in literature.

[9] The definition of "block" was initially chosen to avoid the preconceptions associated with the use of the word "*insulae*", as part of the interpretation of the geophysical anomalies: Johnson 2012: 52–53.

In the integration of survey and excavation resides also the opportunity to understand the difference between the theoretical project of a planned settlement and its progressive realisation, achieved in the course of time and incurring many changes with respect to the original design.

The exceptionality of these results did not mislead us and we have never been tempted to force our interpretations or to neglect different methodologies and means of research or to quit seeking for improvement of our approach and enhancement of our *instrumentarium*.

The inclusion in the *Ammaia* project of ICTs and Virtual Archaeology specialists provided the possibility to realise exceptional digital reconstructions and visualisation tools which have attracted the attention of the scientific community and the public (see, e.g., *Ammaia* 2013). We wish to emphasize that these reconstructions are the result of a most fruitful exchange of ideas and collaboration between specialists of different fields, and that what has been produced until now is considered as a work in progress and a means for the full understanding of the material, topographical and monumental texture of the town.

Significantly, in *Ammaia* we tried to respond to the invitation of Andrew Wallace-Hadrill (1994:7) not to consider the excavated archaeological complexes as a mere "repository for items of evidence" and to recreate the social context that inhabited or frequented them. Following the suggestion of Simon Keay (2001: 136), instead, we will attempt the analysis of the contexts where fine wares, amphorae and elements of the architectural decoration contributed to the understanding of the characteristics of the built environments in which they were used, and implicitly we will try to understand how these imported goods gave substance to a "Roman" way of life.

Referring to the spatial analysis carried out on the hierarchy of urban axes and to the study of movement in urban environment (*supra*), we will try here to deepen our comprehension of the "spatial logic" of the town as a whole and of its individual monuments. Trying to connect the architectural and plan features to what can be recuperated of the other forms of decoration and furnishing, and of the material objects collected with excavations, we will endeavour to understand the "social space" and the relationships between individual units and the monumental setting of the townscape in its entirety (Revell 2009: 21).

Excavation methodology and material processing issues

In this volume, we will define as "old excavations" those carried out from the start of the *Ammaia* project (1994/5) through the very limited 2007 excavation campaign. In the first period, most archaeological excavations (mainly those at the Baths and the Forum) were carried out not with the stratigraphical approach but by identifying (arbitrarily or on the basis of criteria which are not described in the reports) different levels, which are usually labelled with the absolute quote (a.m.s.l.). The "levels" are those that are reproduced in the plans. For all these excavation contexts, materials and finds have been labelled in most cases only with the number of the square as provenience; rarely, the level is also indicated in the tags.

In these same "old excavations" other methodologies were adopted, including the use of "stratigraphic units", though it does not comply fully with the rules of stratigraphic excavation as systematically defined in the literature (e.g. Harris 1979; Harris *et al.* 1993). Indeed, it emerges with clarity in the reports of the excavations inside the building of the Quinta do Deão, which hosts the museum, the same stratigraphic unit designations (eventually distinguished as SU 1a, SU 1a^1, SU 1a^2, SU 1b^1, etc.) were used in different locations (*Relatorio* 2001: 17–18) and different rooms. Substantially, the term "stratigraphic unit" has been improperly used to address "levels".

Other discouraging experiences have resulted from reconstructing the history of research at the Southern Gate. Here, the problem with documentation also involves the above-ground structures, as the West Tower was restored in the early years, but little was done to make these interventions detectable.

For these reasons, we do not consider the "stratigraphy" of the Southern Gate to be reliable for the analysis of contexts, as José Carlos Quaresma does in his study of the fine wares here (chapter V.3) and elsewhere (e.g. Quaresma 2010–2011), where he refers to "layers" for the analysis of contextual associations although it is clear that the excavations used only "arbitrary levels".

Starting in 2008, under the direction of Cristina Corsi and Frank Vermeulen, the excavations were strictly "stratigraphic" and a new numbering system for stratigraphic units was started. In the excavation campaigns of the Baths (2008, 2009, 2011), the Forum Temple (2010, 2011) and the Forum Portico (2010), all the identified stratigraphic units (SU) were numbered starting from 1 (Baths), 1000 (Forum Temple) and 2000 (Forum Portico).

All identified contexts, including structures and intrusive features (postholes, trenches, destructions, etc.) were described on a standard SU form. The form was produced especially for the site of *Ammaia* and—following our personal experience—was substantially inspired by the SU forms which are in use in Italy. Here, a national cataloguing system of stratigraphic units has been in use since the 1980s, and a current digital database is kept at the Istituto Centrale per il Catalogo e la Documentazione (ICCD: central institute for catalogue and documentation). The SU forms have been digitised and the database has been connected to the georeferenced plans of the excavations, in the general framework of the GIS, developed by Eleftheria Paliou especially for the site (Paliou 2012; Corsi *et al*. forthcoming). The database includes records with multimedia data (texts, photos, drawings, etc.). In these latest excavations, all finds have been assigned to the context in which they were found by its SU number.

Since the beginning of archaeological excavations in *Ammaia* in 1994, all finds have been washed and processed in the 'depot' of the *Ammaia* museum, under the supervision of the archaeologists of the *Fundação Cidade de Ammaia*, but until 2008 they were not systematically numbered, registered and professionally conserved. Starting in 2010, metal finds have been preliminary treated in the *Ammaia* laboratory and they are stored in the *Ammaia* site depot and the laboratory, together with all finds from the old excavations, but special precautions and packaging have been adopted to ensure their conservation.

As soon as we were able to award fellowships and to involve other scholars for the materials processing (*infra*), the study of several categories of finds began. Here we will present a selection of fine wares, coarse ware, amphorae, glass, coins and architectural stones, which is neither complete nor exhaustive, and in some cases limited to only one excavation sector (e.g. the glass from the Southern Gate) or to old excavations (e.g. the coins). Other categories of finds (e.g. the gemstones) will be presented elsewhere (by Arjen Bosman), while other groups (e.g. metalwork and jewels) will be hopefully studied by new generations of researchers who will continue our work in *Ammaia*.

Considering the diverse nature of these studies, and given the discouraging heterogeneity of data and metadata on the conditions of discovery, and the unfortunate, often unsystematic, approach to storing and cataloguing procedures, some of these sections on the materials could be judged inhomogeneous, in spite of the efforts done to uniform the cataloguing system. Indeed, considering the disarticulated situation that beset the site, great strides have been made even if greater uniformity in the inventory system would surely have been profitable.

For a selection of finds which were entered into the database, we created a numbering system, which identifies each find with a code that indicates the provenience and the year of discovery (when known). These new identification codes have only been used here in the catalogue of the common wares and amphorae.

As anticipated above, several archaeological finds of great value and in exceptional state of preservation were collected at the beginning of the twentieth century through the collaboration and friendship established between Leite de Vasconcelos and António Maçãs. The latter sent to Lisbon a total of more than 100 pieces (common ware, Red Slip ware, lamps, glass vessels, etc.), which are thought to have derived from one of the necropoleis of the town; unfortunately, no information has been provided about the location and the conditions of the finds (Oliveira and Cunha 1993–94: 103–134).

For several categories of finds, mainly for the glass and the common wares, this collection, offering entire pieces and fully preserved shapes, constitutes an essential reference.

e Archaeologists, geomorphologists, geologists, geochemists, surveyors, ICTs specialists and engineers: an interdisciplinary team at work

As discussed elsewhere, the uniqueness of the "project *Ammaia*" is that all possible approaches to fieldwork, data processing, analysis and visualisation of results were attempted, with the support of a very composite, multidisciplinary international team of researchers. Traditional sources and instruments of research have been systematically and carefully used in the same way in which innovative approaches and applied technologies have been deployed.

As stated in our "master plan" (*supra*), the intention was to transform *Ammaia* from a remote archaeological site where few areas were excavated into an international interdisciplinary laboratory for advanced studies in landscape and geo-archaeology, applied technologies, material studies, restoration and conservation activities and archaeometry.

When the new coordination of the archaeological activities was established in *Ammaia* (2007, *supra*), one of the main objectives of the "master plan" was the activation of the Laboratory for Analysis and Conservation implanted years before by the *Fundação Cidade de Ammaia*, which at that time boasted a great set of tools and instruments for the conservation of archaeological finds but lacked specialised personal. With the necessary and strong support of the FCT (the Portuguese National Fund for Research), starting in 2008, several fellowships for technicians based in the on-site laboratory and for young scholars to study the huge quantity of archaeological finds stored in the depot of *Ammaia* and their contexts have been awarded. The list of fellows includes post-doc, doctoral and master researchers like Catarina Alves (stratigraphic excavations—CIDEHUS-FCT), Sofia Borges (archaeological museum and depot—University of Évora), Ines Cardoso (mortars—HERCULES Centre-FCT), Joaquim

Carvalho (archaeological museum and depot—CIDEHUS-FCT), Vitor Dias (Roman common ware pottery—CIDEHUS-FCT), Sara Persichini (Roman *fora* comparative research—CIDEHUS-FCT), José Carlos Quaresma (Roman fine wares—CIDEHUS-FCT), Nicola Schiavottiello (modelling in 3D and structural reconstructions—CIDEHUS-FCT) and Caterina Venditti (Roman amphorae—CIDEHUS-FCT). Other young technicians have begun their training in conservation and restoration in the laboratory of *Ammaia*: Helena Solano (conservation of archaeological materials—FCT), Dulce Osorio (conservation of architectural structures—FCT), Carina Maurício (conservation of metal finds—FCT).

Other fellows are supported by Belgian and Italian institutions: Emilia Gallo (structural analysis of walls—University of l'Aquila), Vincenzo E.J. Macchione (structural analysis of walls—University Sapienza of Rome) and Devi Taelman (stone exploitation and building materials—Ghent University), while other scholars, such as José Ruivo (coins—Museu Monográfico de Conímbriga) and Mario da Cruz (glass—University of Minho), have accepted the challenge to study the finds from *Ammaia* in the framework of their research interests.

Internationally renowned specialists have joined the enterprise of making of *Ammaia* a top-class multidisciplinary research centre: Morgan De Dapper (geomorphology—Ghent University), Elisabetta De Minicis (Archaeology of Architecture—University of Tuscia), Paul De Paepe (geology—Ghent University), Marlina Elbers (geology—Ghent University), Luís Lopes (geology—University of Évora), José Mirão (glass studies—University of Évora), António Candeias (archaeometric analysis—University of Évora), Carlos Silvestre (LiDAR survey—IST-Lisbon).

Furthermore, we have been always able to rely upon the friendly advice of colleagues like Carlos Fabião (University of Lisbon), Amilcar Guerra (University of Lisbon), Vasco G. Mantas (University of Coimbra), Filipe Themudo Barata (University of Évora), Nelson Almeida (geology, formerly IGESPAR), and on the support of the personal of the *Fundação Cidade de Ammaia*[10].

At this stage, we can proudly say that most categories of old and new finds have been studied and treated for conservation, and analysis has been done on several categories of materials, such as stone, ceramics, mortars and glass. Some of this research is presented here, as an essential part of the processing of the data retrieved with excavations. Unfortunately, it has not been possible to include in this publication the results of the archaeometric analyses performed on some materials, such as the glass, pottery and mortars (at the HERCULES Centre of University of Évora), and of the amphorae (at Ghent University, Department of Geology Laboratory), because of the unavailability of their authors and promoters. I still hope that further publications, following that of the mortars (Cardoso *et al.* 2013, see note 10 chapter V.1), will be released in future.

It was not possible to present in this volume the interesting results achieved in the framework of the collaboration with the Instituto Superior Técnico of Lisbon, now fully integrated in the University of Lisbon, about the development of new tools for remote acquisition of geophysical information using aerial robotic devices (Guerreiro *et al.* 2012; Guerreiro, Silvestre and Cunha 2012), as these aspects are more related to the survey.

To bring to publication the material elaborated in the course of twenty years of fieldwork by many researchers of different levels, dissimilar specialisations, training and methodological approaches has been a huge effort.

To deal with old excavations is always complex (Corsi *et al.* forthcoming), but in the case of the old excavations of *Ammaia*, the enterprise was almost hopeless. The quality of documentation was very poor, often inconsistent and a large amount of information is lost forever because of the lack of scientific documentation and careless data storage and management. In these conditions, interpreting and reworking the stratigraphic sequences of excavated areas, even when re-processed with new excavation techniques, has been very complex and many questions were, and will always be, left open.

The quality of contributions I received was very unequal and I have not always been able to make uniform the contents and the approaches. I had to intervene consistently in texts, catalogues, general interpretations, and even in the image support, and I practically had to rewrite some parts. I tried to respect the opinions of the authors, though when contrasted with the general interpretation I tried to discuss with them some key points.

All the texts have been written in English by non-native speakers and therefore they inevitably contain errors and flaws and sometimes lack technical specificity in the terminology and in the structure, but this is an unavoidable fee to pay to the internationalisation of archaeological publishing.

The chapters I.1-4, II.1-4, II.7, III.1-3, IV.1, and this Introduction have been proof-read by Lacey Wallace, who, being an experienced archaeologist, has substantially contributed to the improvement of the comprehension and scientific correctness of the contents.

Archaeological research can be defined as an investigative activity, in which, as a detective, we must collect the smallest clues and combine them together so as to compose a comprehensive picture. Understanding is more important than finding. It is as if, when undertaking an archaeological field project, we were given a 1000-piece puzzle box, and were asked to compose an intelligible framework, even if, alas, most of the pieces are missing. In *Ammaia*, we were given a defective box, where most pieces were not only missing but in many cases damaged and unusable. Therefore, much more patience and resourcefulness have been necessary.

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[10] Most of the plans of excavated areas presented here have been elaborated by João Aires, while the tables with drawings of the glass, individually realized by Mario da Cruz, and the photos of coins have been set up and "photo-shopped" by Joris Angenon.

All in all, given the starting point, I do consider the publication of this volume an essential step in the long process of understanding the history of *Ammaia*. Many contradictions that were recorded during fieldwork have been resolved and we have been able to build a satisfactory general picture, where opinions that were initially contrasting now find a common ground where *Ammaia*'s society and monumental evidence are described and understood in many of their aspects.

As my last act in the long activity that has seen Frank Vermeulen and myself accepting the challenge of making *Ammaia* and our interdisciplinary work internationally known, I am relieved in seeing that our efforts have brought to appreciable results. I hope that this path will be followed by others after us and that the richness of professionalism which in recent years has been grown together and around us would not be lost.

Notes for readers

In this volume, we tried to adopt a correct terminology for certain materials which are usually improperly defined in archaeological literature.

Following the accurate analysis of written and material sources, specialists (Ginouvés and Martin 1985, I, s. v.; Giuliani 1990: 171–174) have been able to establish that what is currently defined as *opus signinum* ought not to be identified with the type of concrete whose peculiar components and the rigid rules for mixing have been described by Vitruvius (8, 6, 14) and Pliny the Elder (35, 46, 16), and which is said to be developed by the masons of the town of *Signia*, in Southern Latium. The latter is, in fact, a concrete, in which fragments of terracotta do not feature. "*Cocciopesto*", instead, is a hydraulic mortar composed of a compact mix of crushed terracotta and lime, used to render surfaces impermeable.

At the same time, in the analysis of mortar, the improper use of the qualification of "pozzolanic" for components related to ground terracotta fragments has been avoided, as pozzolan is a quality of tufa, a definition that can be extended to volcanic pumices and tuffs, the nature of which is similar to that found in the area of *Puteoli*, not far from Naples.

Furthermore, being Italian, I am fully aware of the fact that "Italy" and "Italians" did not technically exist before 1860[11]. For this reason, I took the responsibility to use the term "Italic" instead of "Italian" in all the texts when referring to productions or cultural characteristics of the Italian peninsula in Antiquity.

Images without specification have to be credited to the author of the chapter.

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[11] The "*tota Italia*" episodically mentioned in ancient sources does not refer, in fact, to a political entity, but rather to a geographical ideal space, related to the peninsula, and is addressed to a unified entity resulting from a "disunited past or fragmented space" (Laurence 1999: 162–176).

PART I

THE FORUM

I.1 THE OLD EXCAVATIONS (1994–2000)

Cristina Corsi

As previously reported (see Introduction), it was not until 1994 that documented archaeological fieldwork and excavations took place in *Ammaia* (Mantas 2000; Oliveira, Pereira and Parreira 2007; Pereira 2009; Vermeulen and Taelman 2010). The first cleaning operations of certain standing ruins on what was soon identified as the forum area were initiated by J. de Oliveira in 1995; from 1997 onwards, the operations were organised by the *Fundação Cidade de Ammaia* in close collaboration with the University of Évora. The first phase of excavations in the Forum area were directed by V. Mantas of the University of Coimbra and ended with the final campaign in 2000. This annual (excluding 1998) programme in the Forum area essentially focused on places where visible ruins indicated the presence of subsurface Roman remains: the *opus caementicium* core of the main temple podium (Fig. 8), a few traces of nearby wall structures (later identified as a portico) and fragments of standing walls that could belong to a basilica, near the modern Marvão–Portalegre road crossing the site. Only preliminary results of this early work were published (Oliveira, Fernandes and Caeiro 1996; Mantas 2000; Pereira 2009), but the fundamental aspects were succinctly described in short annual fieldwork reports (hereafter referred to as "*Relatorios*"). The data necessary for understanding the chronological evolution (e.g. ceramics, coins, etc.) of the monumental core of the ancient city have been reported on in the same way. In the following sections, we present an overview of the essential information from these reports.

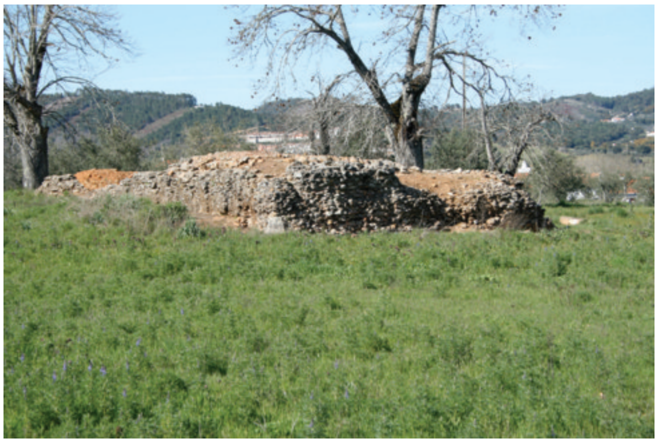

Fig. 8 *Ammaia*, São Salvador de Aramenha. View on the central area of the Forum with remains of the temple podium before excavations (photo by D. Taelman).

a The temple area

In 1995, cleaning operations started in the area of the temple podium, removing stones from around the monument which had been conveniently piled there during agricultural work. A granite facing stone of the podium—only the nucleus in *opus caementicium* of which remains above ground today—was identified among these stones. Likely, the block was brought in front of the Museum, where many other stones and architectural pieces have been brought (see catalogue in chapter IV.1) but it is not given to know which one it is, for in those years it was not use to record the provenience of these pieces. Therefore, we can only rely upon the information that it was finished in a "rusticated" manner. Another block, erroneously described as covered with *opus signinum* (*Relatorio* 1996: 6; for the exact definition of this material see: Notes for Readers, p. 15), related to the other structures which surrounded the temple was found in the area.

The dimensions of the podium were established during this clearance: 17.50 by 8.90m, with a preserved maximum height of 2.50m. Two terracotta slabs embedded atop the podium indicate the floor level within the *cella*. A minor dividing wall orthogonal to the main axes of the podium indicates that the space above was divided in two unequal parts: the front portico (6.70m deep) and the small *cella* at the rear (10.80m deep). During these operations, no other upstanding walls or columns were discovered on or near the temple ruins.

The Forum temple was constructed on a solid foundation of dry masonry of mostly unworked cobbles (0.10m to 0.25m diameter). On top of this core, the external wall of the superstructure, a dividing wall between the *cella* and the front porch, and a transverse wall for stability in the *cella* were erected. The exterior wall is constructed in courses of *c.* 0.45m in height. The first two courses are slightly offset (*c.* 0.20m) and faced with rusticated granite ashlar blocks of alternating headers and stretchers. The blocks measure approximately 0.50 (H) by 0.60 (W) by 0.40m (D). Only a few granite blocks are preserved *in situ*, but the negative traces of several blocks were still discernable during excavation/cleaning. The upper courses of the external wall have a facing of roughly dressed and irregular granite blocks. The core of the podium walls is primarily composed of roughly dressed blocks of granite and sandstone with diameters between 0.05m and 0.20m. The wall widths vary from 0.55m for the transverse wall of the *cella* to 0.75m for the internal wall separating the *cella* from the front porch and *c.* 0.90–0.95m for the outer walls. The front wall of the podium, which had to support four massive columns, is about 0.30m wider and measures 1.25m. It is possible to establish that the podium fill consists of a compact sterile deposit, similar to the deposits used to fill the NW portico and for the leveling of the Forum square. First, a preparatory layer of large cobbles and small boulders (0.30m to 0.40m across) mixed with shale slabs and smaller pebbles was deposited. This was followed by a 0.10–0.15m-thick floor or floor preparation of hydraulic mortar composed of a compact mix of crushed terracotta and lime (*"cocciopesto"*). In the *cella*, the paving consisted of large ceramic tiles measuring 0.30 by 0.40m.

In 1996, a small trench of 4 by 2m was opened outside the SE corner of the podium, and part of a structure, described by the excavators as constructed in *opus incertum,* was observed there and attributed to the foundations of the staircase of the temple (*Relatorio* 1996: 6).

b The portico area

As mentioned in the Introduction (p. 7, Fig. 3), to initiate a more systematic approach to the excavation of the site, in 1996 the research team divided the whole site area into four sectors (A, B, C, D) with two perpendicular axes oriented N/S and W/E crossing *c.* 20m S of the podium of the temple. Each sector was divided into 5-by-5m grid squares, numbered in units of 100 (Fig. 9). These numbers follow the letter of the sector to which they belong. That year, excavation was carried out in seven of these squares, all located in what we now know to be the northern corner area of the portico surrounding the Forum temple (squares A1201 and A1101, D1201, D1202, D1203, D1101 and D1102). The excavated area of each square measured 4 by 4m, with 1m baulks dividing the squares. None of these squares was fully excavated to the natural substratum and the majority of the information in the reports, including photos and drawings, relates to the discovered portico walls. We will refer here to the plan of the new excavations (Fig. 10).

Under the *c.* 0.40–0.50-m-thick modern layer disturbed by agriculture and robbing, excavation soon revealed a portion of a large structure whose function was unknown at the time. Only four years later, it was recognized as the portico ("wings") surrounding the sacred part of the Forum on three sides. The first excavation, therefore, discovered part of the NE wing of the portico and the adjoining angle of the NW wing (hereafter, see new excavations: trench P1 and adjoining trenches, Fig. 10). Based on *Terra Sigillata* fragments and the architecture, the chronology of this structure was preliminarily fixed in the second half of the first century AD, even though the relationship between the pottery and the walls was not fully established (*Relatorio* 1996: 6). This was hindered by the method of excavating in artificial spits instead of stratigraphic units, which sometimes led to the mixing of materials from different contexts. Recent re-evaluation of the walls discovered in 1996, undertaken by specialists in the technical study of ancient wall structures (see chapters I.5 and V.1) supersedes, the earlier descriptions of the walls, and so we will omit the earlier observations organised by excavation square. We prefer to group the description of the full portico structure in the following sections.

In an isolated, and only partially excavated, trench in the area N of the portico sector (*Relatorio* 1996: 6), the team also mentioned the discovery at 0.60m depth (in square D2302) of a "younger structure with an entrance corridor and three granite columns (of which two seem *in situ*)" interpreted as a restructuring of the late second century AD. Today, we know that this structure was not in fact part of the portico complex, but, rather, probably belonged to a housing sector N of the Forum. Excavations were not continued in this sector.

In 1997, when excavation in some areas of the portico (squares A1101 and D1101) reached 1.30m deep, two herbivore skeletons were found in such a position that they were assumed to have been caught by a sudden roof collapse and trapped under the rubble. This discovery could indicate a late (private) use of part of the Forum as stables. No distinct chronology is available for this context. Among the finds from the (deepest) level that was considered the first related to the original construction of the portico walls, a fragment of South Gaulish *Terra Sigillata* and a thin-walled sherd, attributed to the shape Mayet XLIII or XLIV, pointed, again, to a date in the second half of the first century AD (*Relatorio* 1997: 5). The filling of the portico structure ("structure 2" excavated in squares A1101, D1101 and B1102) contained mostly rubble of collapsed building materials (Figs. 11, 12), as well as many fragments of roof tiles and plaster of fine quality (*Relatorio* 1997: 5). Only two layers were distinguished during the excavations of this corner of the portico (see trench P1 of the new excavations, Fig. 10): the upper layer of pale brown soil, almost sterile, the lower layer of darker brown soil, mixed with ash, many pieces of masonry which originally belonged to the two walls, ceramic building material, fragments of plaster and some iron fragments, possibly nails (*Relatorio* 1997: 11, 12). In a later report (*Relatorio* 2000: 13), it is mentioned that many animal bones were also found in this general area as well as a human skeleton that would have belonged to an irregular grave post-dating the Forum phase, but neither contextual nor chronological data are available.

During the same campaign, a small trench (2 by 5m) was opened in square A1101 (i.e. the north-eastern part of

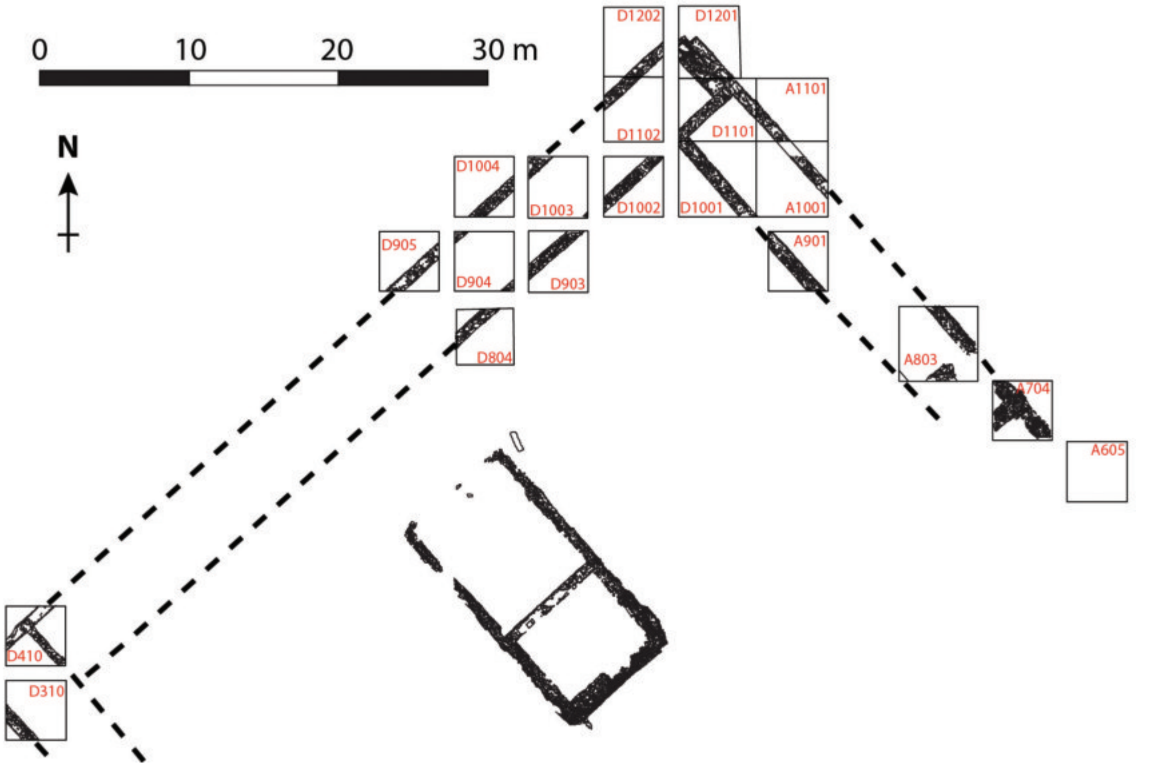

Fig. 9 *Ammaia*, Forum. Positioning and numbers of the squares excavated during the seasons 1994-2000 (elaboration D. Taelman after © *Fundação Cidade de Ammaia*).

new excavations trench P1; Fig. 10) to investigate the stratigraphy on the northern side of the outer portico wall (near sections 2 and 3 of the new excavations, see Fig. 10). The foundation was found to be 0.80m deep and built directly atop the sterile soil. It was composed of roughly worked quartzite blocks mixed with mortar (*Relatorio* 1997: 5–6).

The excavation of square A605, an isolated unfinished trench E of the NE wing of the portico (that is, E of trench A803 of the new excavations; see Fig. 10), began in 1999 and revealed several layers with frequent stones and fragments of ceramic building material. Among these was found a block of granite (0.55 by 0.80m), interpreted as a voussoir, i.e. a wedge-shaped stone used to build an arch or a vault (*Relatorio* 1999: 22). Therefore, the hypothesis was advanced that one of the original entrances to the Forum was located there, although *in-situ* wall structures were not preserved (*Relatorio* 1998–2002: 26).

Together with many fragments of ceramic building material and marble, 11 fourth-century coins were found in this NE sector of the portico area (*Relatorio* 1999: 22). The only information from the excavation report worth mentioning of square A704 (located directly SE of A803; see Fig. 10) is the finding of 6 coins dated to the end of the third century AD, many fragments of marble (*Relatorio* 1999: 23), several pieces of wall plaster and the usual fragments of ceramic building material (*Relatorio* 1999: 25). The almost-fully excavated square A803 opened in the same year 1996, revealed many animal bones mixed with the usual stones, fragments of ceramic building material and lumps of mortar (*Relatorio* 1999: 24). A complete bovine skeleton was found in one of the deeper levels above a layer of rubble and what was recognized as the remains of an *opus caementicium* floor (*Relatorio* 1999: 25). A very small part of the finds from these old excavations in the NE wing of the portico will be presented further (chapters I.6, I.7, I.8), but here we can underline, as did the original excavators, the huge quantity of common ware, *Terra Sigillata*, iron fragments and fragments of marble and bones. Among the three coins found in this square, only one was identified at the time and dated to the beginning of the second century AD (*Relatorio* 1999: 25).

The squares D310 and D410 were also opened in 1996, revealing parts of wall structures of the western wing of the portico similar to those near the eastern wing of the portico. Although, as with other squares, the excavation of these squares remained largely unfinished, it is worth mentioning that several pie-shaped bricks used to compose columns were found here (*Relatorio* 1999: 26). Furthermore, proof was then obtained for the continuity of the portico in that western sector and for the general width of the whole outer Forum structure.

In 2000, seven more squares were opened, positioned in such a way that the two parallel walls of the portico delimiting the north-eastern and north-western sides of the Forum were better revealed (they are squares 804, 903, 904, 905, 1002, 1003 and 1004, all of sector D). In several squares

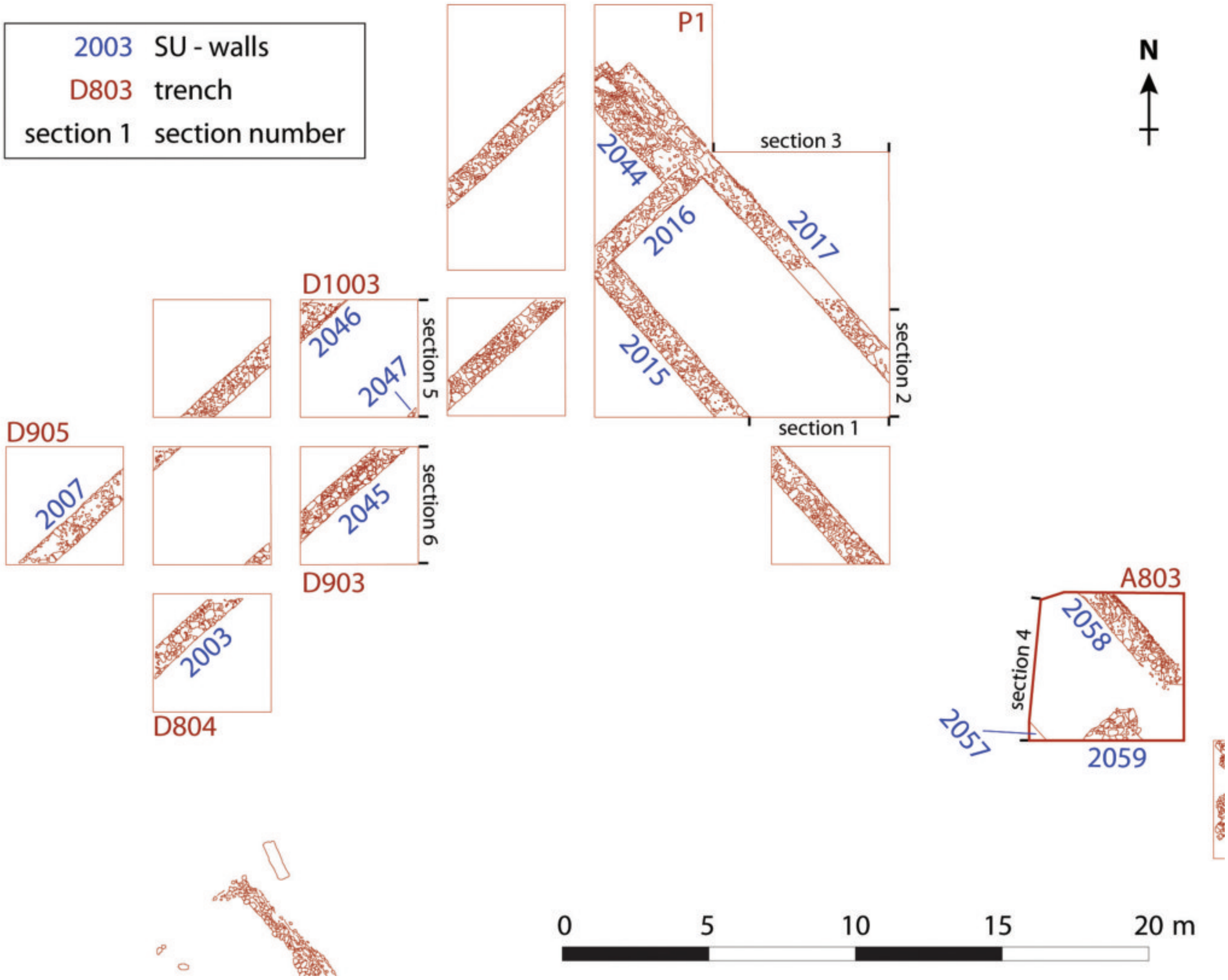

Fig. 10 *Ammaia*, Forum. General plan of the portico excavation campaign in 2010 with indication of studied squares, sections and SUs numbers (elaboration D. Taelman).

(e.g. D804), a destruction layer containing many pieces of granite and fragments of ceramic building material was found (*Relatorio* 2000: 14). Excavation was only taken down to natural in square D1003 (*Relatorio* 2000: 14). Upon completion of the excavation of this trench, the authors of the report were not able to establish whether the surrounding structure of the Forum square had to be interpreted as a portico used only as foundation of the platform of the complex or as a cryptoporticus, intending with it a corridor used for circulation. At the basis of this uncertainty, was mainly the contrasting interpretations of the excavation data. On one hand, the archaeologists interpreted the filling of the space inside the portico as intentional and they remarked the absence of a proper flooring level (*Relatorio* 2000: 15). They observed that the chronology of finds was "inverted", meaning that the most recent materials were found in the lowest levels. This could have meant that the soil used to fill this space was excavated elsewhere and progressively dumped into this corridor. On the other hand, they supposed that this corridor (i.e. the inner space of the portico) was originally meant for use as circulation space, considering that the walls were accurately finished and plastered, suggesting that the whole structure might be a cryptoporticus (*Relatorio* 2000: 16).

We will see below how this contradiction has been solved in recent excavations.

To conclude this brief overview of the first phase of excavations, we must stress that they had the great merit of discovering and clarifying the general plan of a large portico-like structure surrounding the area of the Forum temple on three sides. The earlier excavations also allowed V. Mantas (Mantas 2000) to propose a reconstruction of a large rectangular Forum of some 65m wide, surrounded by a portico, with a north-western religious zone including an axial temple, and possibly bordered on its south-eastern short side by an as-yet-undiscovered basilica, which would

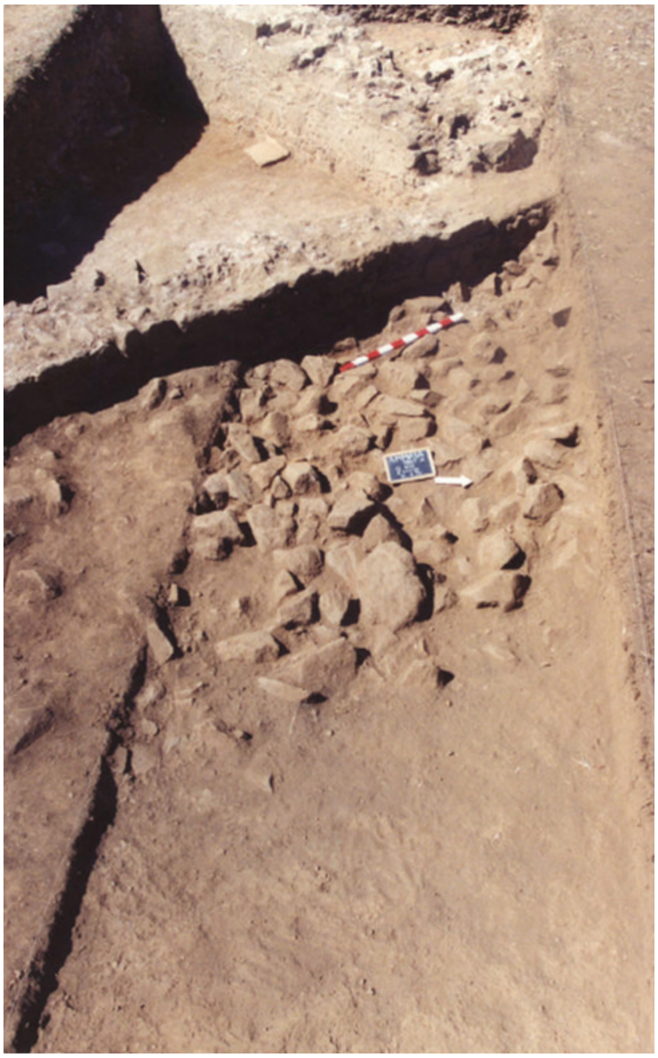

Fig. 11 *Ammaia*, Forum. Discovery of part of the portico walls *in situ* and a layer of wall collapse near the N angle of the portico during the first excavation phase (1995-2000) (© *Fundação Cidade de Ammaia*).

also have brought the suggested length of the whole complex to almost 100m (Fig. 13). Nevertheless, many questions remained, not least concerning the precise character of the portico, the detailed plan of the whole Forum and, above all, the general evolution and chronology.

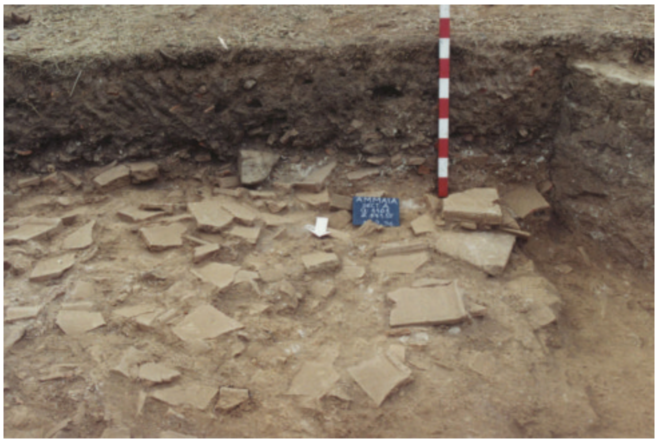

Fig. 12 *Ammaia*, Forum. A layer of roof collapse in area A1101 during the 1996 campaign (© *Fundação Cidade de Ammaia*).

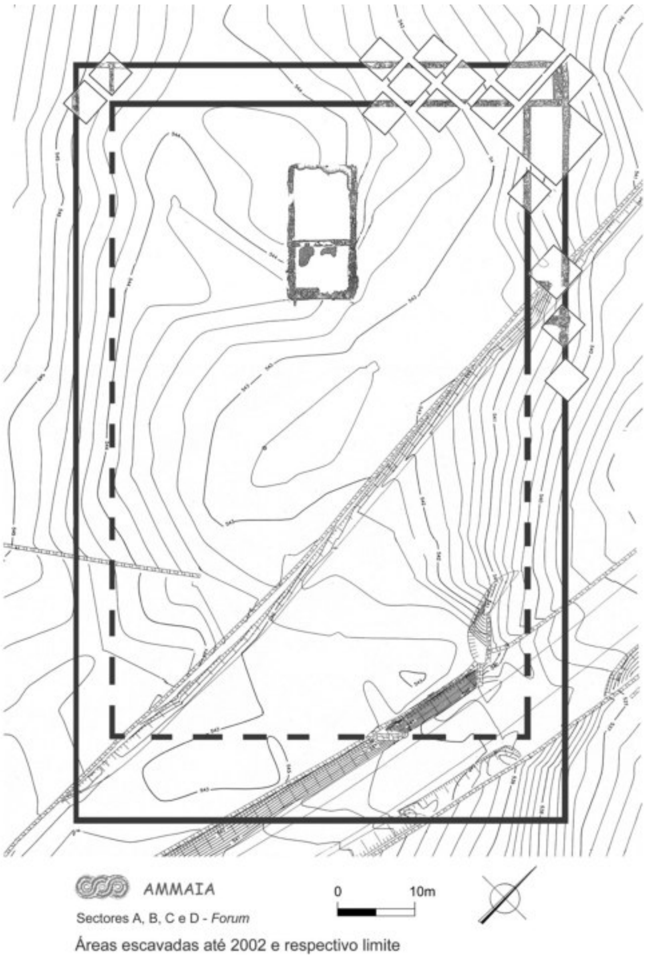
AMMAIA
Sectores A, B, C e D - *Forum*
Áreas escavadas até 2002 e respectivo limite
0
10m

Fig. 13 *Ammaia*, Forum. Proposition for the plan of the Forum after the first excavation phase (Mantas 2000).

I.2 THE NEW EXCAVATIONS (2010–2011)

Cristina Corsi, Devi Taelman and Frank Vermeulen

The intensive survey operations did not eliminate the necessity of further excavation work to understand the architecture and chronological evolution of the Forum better. As an essential part of the Radio-Past and of the "*Ammaia*" projects, ground-truthing operations of well-focussed small-scale excavations were needed to evaluate the geophysical survey results fully. They were deemed essential in order to understand the nature of some of the geophysical anomalies that were interpreted as architectural and structural elements, to identify their material and character, to date them and propose structural phases for the Forum and to understand the presumed Roman adaptations to the natural topography and local soil conditions. Through these small-scale interventions, it would also be possible to complete and expand further the insufficient data of the earlier excavations conducted on the Forum.

The new excavations by the University of Évora, which were carried out during an intensive summer campaign in 2010 and in additional operations in 2011, concentrated on two areas: some incompletely excavated squares of the NW and NE wings of the temple portico and the zone immediately S and SE of the temple podium (see Figs. 10, 14). Unlike the earlier excavation methodology at *Ammaia* (see above), all exposed and excavated archaeological deposits were recorded as single contexts (so-called stratigraphic units). Sections were hand-drawn and all were photographed with ground control points for the rectification of photos. Plans of the contexts and features were recorded using electronic distance measurements (EDM), digital photography and field sketches. Small finds and sample registers, EDM register, registers of photographs and drawings, field notes and a diary were kept. Finds were washed and processed in the *Ammaia* museum, metal finds were preliminarily treated in the *Ammaia* laboratory and finds are stored in the *Ammaia* site depot, together with all finds from the "old" excavations.

a The temple area

The main objective of the new excavations in sector D[1] was twofold: first, to use this new and small-scale intervention to investigate some of the geophysical anomalies (*infra*), second, to improve the knowledge of the chronological phasing, of the architectural setting of the temple area and of the relation with the adjoining Forum square.

In the summer of 2010, a larger trench was opened just in front of the podium of the temple, where the steps were expected to be found. At the end of the campaign of the same year, the SW corner of the podium of the temple was also investigated, by means of a small excavation trench, irregularly shaped, which tried to trace back the limits of the trench opened in 1995, for which no textual, graphic or photographic documentation existed.

These operations were directed by Cristina Corsi, with site supervision by Marianna Norcia (2010) and Sara Persichini (2010 and 2011), the collaboration of Italian students from the University of Cassino, and the support of the staff of the *Fundaçao Cidade de Ammaia*. During the 2011 season, two FCT-fellows also joined in the fieldwork (Catarina Alves and Vitor Dias).

Trench 1

In the summer of 2010, a trench of 6 by 10m was opened. With the help of a small excavator, the topsoil, up to a maximum depth of 0.10/0.15m, was removed with the mechanical shovel. The first trench (named Trench 1) was placed near the SE corner of the podium of the temple (Fig. 14) to maximise the possibility of locating what was seen in the results of high-resolution geophysical survey (*infra*). During the second campaign, (July 2011), the south-eastern corner of the Trench 1 was enlarged to an approximately rectangular area of 6 by 3.40m (see Fig. 14), extending Trench 1 to a total surface of 10 by 13.40m.

The preliminary operations involved a manual cleaning of the top part of the podium on the southern side and of the structures recognised after the removal of the topsoil.

What appeared to be the setting of the temple front in its last phase were the preparation layers for steps adjoining the front of the podium, flanked by two rectangular podium projections or so-called foreparts, which encapsulated the corners of the *pars antica* in such a way that their dimensions are: 5.858m (the maximal length along the external sides), 3.80m (the internal length of the foreparts protruding from the front) and 1.84m (the width; Figs. 14, 15).

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[1] The intersection of the axes that divide the area of the Archaeological Park in four quadrants overlaps this sector of excavation. However, for clarity, we always referred to it as "sector D". See Introduction: 8.

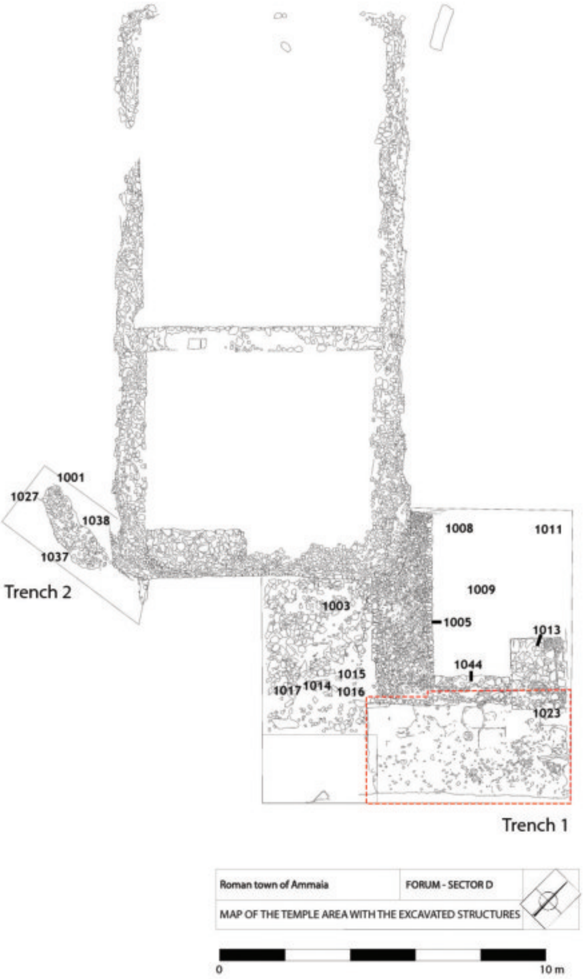

Fig. 14 *Ammaia*, Forum. General plan of the temple area, with archaeological structures and the positioning of the Trenches 1 and 2, with indication of some SU numbers. The dashed red line shows the extension of Trench 1 in the 2011 season (elaboration C. Corsi after © *Universidade de Évora - Fundação Cidade de Ammaia*).

The temple was erected with foundations built above ground (dry masonry of pebbles SU 1007), on which was constructed a podium of concrete (SU 1001). The *opus caementicium* was deposited in different layers, identified by level markers, and it was laid against the *opus incertum* frontal wall (SU 1002) and the partly-lost facing of rectangular granite ashlar blocks. The latter were laid in alternating headers and stretchers; their robbing has been distinguished as SU 1012. The ashlar blocks measured approximately 0.50 (H) by 0.60 (W) by 0.40 (D) m. Only a few granite blocks have been preserved *in situ*, but the negative traces of several were still visible.

Several SUs have been distinguished in the area in front of the temple, between the two foreparts. Most of these layers can be described as the laying of concrete to support the blocks of the stairway (Fig. 16), two others as containing walls of the core of *opus caementicium*. In the general interpretation, on the basis of the stratigraphic relationships and on the quality and composition of the concrete casts, we hypothesized the existence of two phases.

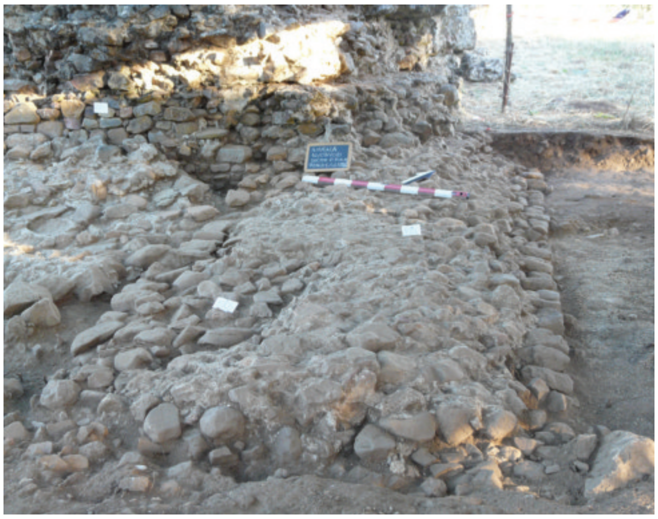

Fig. 15 *Ammaia*, Forum. View of the eastern forepart of the temple (SU 1005) in Trench 1 as it appeared at the end of the 2010 season (photo by C. Corsi).

To the most recent, we attributed the preparatory layer of mortar and large stones (SU 1003), laid against the front-central part of the temple podium. This *opus caementicium* SU 1003 was laid on top of SU 1006, partially visible just at the corner where the eastern forepart (SU 1007) is attached to the podium. SU 1003 partially also covers a small wall of granite blocks placed without mortar (SU 1014)[2]. Even if there is no direct stratigraphical connection, it is our opinion that these blocks belong to the first phase of the temple area setting.

As anticipated, the foundation of the temple is linked to a wall with the same characteristics, forming the western side of the forepart SU 1005 (see Fig. 15). This forepart is built with two facing walls of dry masonry of middle size, normally flat pebbles tidily displayed, containing a filling of pebbles of similar dimensions thrown without mortar. The upper part of this wall is partially covered with a layer of mortar (SU 1004).

A draining level of pebbles and gravel (SU 1009) abuts the forepart SU 1005 (Fig. 17). On this draining surface there were abundant remains of rubble: fragments of granite, tiles and stones (SU 1010). This layer, visible above most of SU 1009, has been interpreted as the remains of robbing and spoliation activities, likely meant to recuperate the granite blocks that formed the facing of the temple podium. Given the very poor quality of the granite and given

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[2] The little wall SU 1014 is only partially preserved and does not link with the forepart. A possible explanation is that it is to be considered a retaining wall for the supporting concrete ramp of the temple steps. This wall connected to an anomaly in the GPR results that was expected to be much larger and robust, and was hypothetically identified with the sustaining wall of a platform, where the sacred part of the forum would have been raised above the rest of the square (*infra*, chapter I.3). But nothing of this kind was located during excavation.

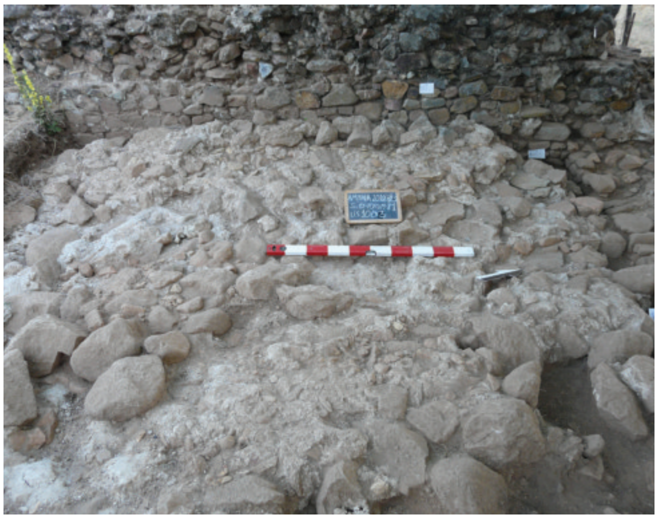

Fig. 16 *Ammaia*, Forum. The *opus caementicium* SU 1003 interpreted as preparatory concrete layer for the setting of the frontal steps of the temple (photo by C. Corsi).

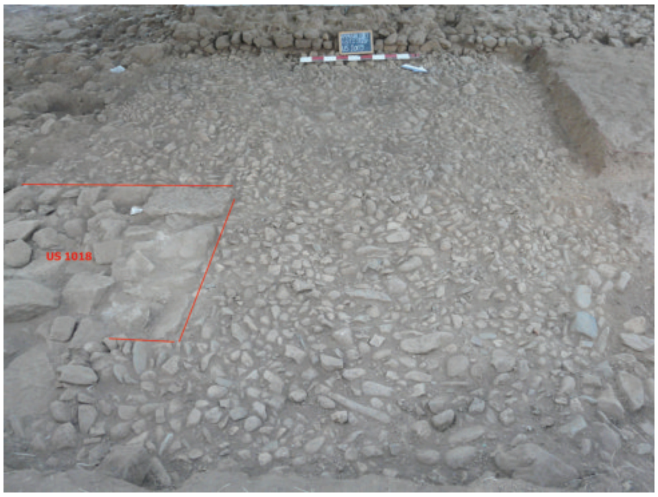

Fig. 17 *Ammaia*, Forum. General view of the draining surface SU 1009 seen from the eastern limit of the trench (photo by C. Corsi).

that SU 1009 was meant as a draining layer, it is unlikely that granite slabs originally covered this draining layer[3]. Instead, as we will detail further below, we consider this surface as the base of a water basin, that could have been built in masonry or made of stone or metal, and could, therefore, have been completely removed by robbing activities.

The "draining level" is identified with the very neat anomaly visible in the GPR survey interpretation by L. Verdonck (*infra*), characterized by a thick "L" shape, caused by a small square base/foundation of large granite stones placed without mortar (SU 1013) surrounded by SU 1009, both of which geophysically "responded" differently. Collapsed rubble of this foundation was visible on the southern side (SU 1023, see Fig. 14). The southern edge of SU 1009 was laid against the foundation or containing wall SU 1044 (Fig. 18).The latter was parallel to the short side of the temple podium (therefore SW/NE oriented) and it is quite clear that the draining level SU 1009 abutted it. This foundation wall, which was 0.66m thick, was built in *opus caementicium*, composed of stones of various dimensions, mostly mid-sized and smaller granite pieces and few fragments of shale; the mortar was white and loose. It abutted the eastern forepart of the podium (SU 1005) and it was erected within a foundation trench (SU 1048). The brown earthy layer (archaeologically sterile) which SU 1048 cut has been called SU 1047. This sterile layer did not seem solid. Indeed, if it is to be considered a rebuild of the temple forecourt we have to consider it as a fill, above the preparatory level SU 1025.

To expose the easternmost part of SU 1044, the collapse layer (SU 1023) of the small square base (SU 1013) was removed. This operation revealed that the wall SU 1044 did not extend towards the east, underneath SU 1023, and that its total length was 2m. On its eastern side, the structure SU 1051, with the same orientation of SU 1044, was uncovered. It was interpreted as the foundation of the base SU 1013 (Figs. 17, 19): this suggests that SU 1013 was larger than hypothesized, possibly about 2.15m on the eastern and western sides, and more than 1.67m on the northern and southern sides. Analysing what is visible on the geophysical results (*infra*), it can be hypothesized that the base had a quadrangular shape.

With regard to the relationship between SU 1044 and SU 1051, it is clear that the former was a later irregular foundation wall, which abutted the latter. This means that the structure SU 1051 belonged to an earlier building phase.

The forepart SU 1005 was intentionally shortened on its southern side in a second phase, its length reduced by *c.* 0.70m (destruction activity SU 1045). The disrupted pebbles (SU 1019) were partially left on site. The cut surface of the wall was covered with a layer of white mortar, large pebbles, fragments of ceramic building material, pieces of quartzite and small/mid-sized pebbles of yellow limestone, that we find often used in the *Ammaia*'s walls.

On the eastern side of the forepart and of the corner of the temple (northern edge of the trench) lay a beaten surface composed of compacted granite rubble (SU 1008). It seems to be the only remainder of the latest surface level of the temple precinct. The "draining level" SU 1009 extends underneath it but does not continue. In the NE corner of the trench, no significant surface layer was identified: SU 1043 was exposed in the course of the 2010 campaign only in the NE corner of the trench, which aided in our interpretation of

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[3] This type of "preparatory level" for flooring and surfacing systems is so characteristic that in the Italian literature it has the name "*vespaio*" (wasp's nest), possibly intending something very thick and structured but still permeable. The SU 1009 has been treated by the team of restorers with a consolidating intervention with Paraloid, mostly at its edge (see Fig. 18).

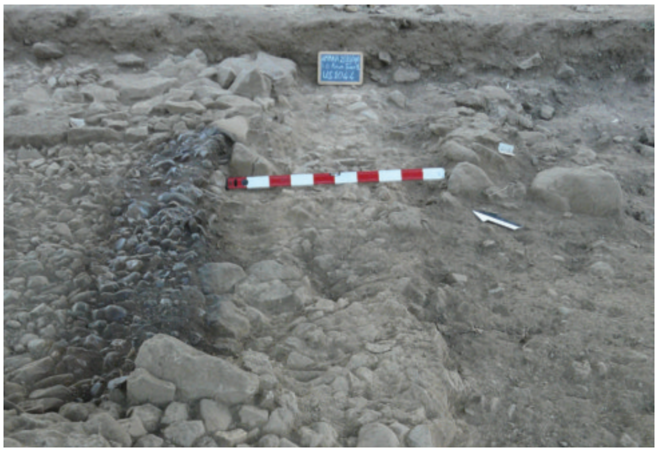

Fig. 18 *Ammaia*, Forum. The wall SU 1044 against which the draining surface SU 1009 abutted (on the left). Visible here is the intervention of the restorers on the edge of SU 1009, to consolidate the pebbles layer with Paraloid (photo by C. Corsi).

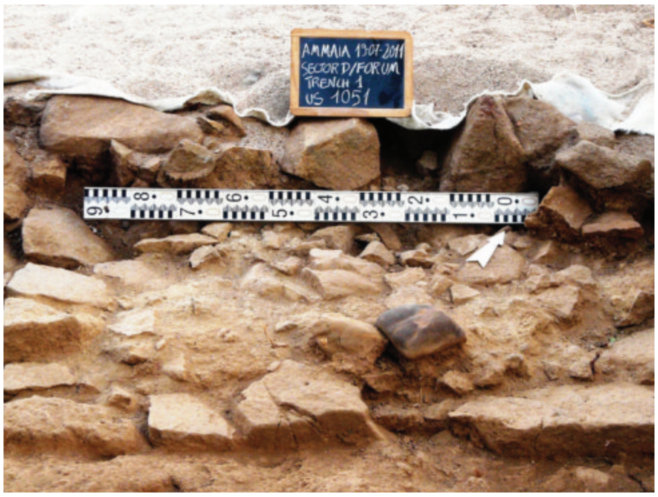

Fig. 19 *Ammaia*, Forum. View from the S of the foundation wall SU 1051 (photo by S. Persichini).

the stratigraphic relationship between SU 1009 and SU 1043, both of which underlay SU 1008.

In the NE corner, a small box trench was opened and a deposit composed of silty and sandy sediment (SU 1011) was partially removed. This deposit contained one fragment of glass, some potsherds (including *Terra Sigillata*), one fragment of *ceramica cinzenta*, ceramic building material and one fragment of a floor tile with finger prints. Despite the heavy wear and apparently small dimensions of these fragments, they are chronologically coherent and can be dated to the mid-first century AD, and certainly no later than Flavian. This layer was overlain by SU 1008, the deposition of which could, therefore, be considered as one of the last events related to the restructuring of the temple area, with a Flavian *terminus post quem*. On the basis of the stratigraphic relationship of SUs 1011 and 1009, we can argue that the placement of a basin (later robbed out) within the temple area should be considered an earlier remodelling which occurred in the second half of the first century AD.

The forecourt in front of the steps was full of rubble and collapsed material (big stones, pebbles, fragments of tiles, bricks etc.). In this area, few layers were distinguished with SU numbers; among them, the most distinctive was SU 1016, which was composed of many terracotta fragments to look like a "*cocciopesto*" (i.e. mortar and terracotta) surface (Fig. 20).

This rubble lay in a collapse angled down southwards towards the limit of the trench, where we hypothesized that the wall SU 1014 contained this concrete core (Fig. 21). Instead, the large squared granite block SU 1017 should probably be reconnected to the second-phase steps of the temple; it cannot be so linked, however, because a substantial robbing trench, characterized by the presence of broken pieces of granite blocks (SU 1020), interfered significantly with the stratigraphy, and it was therefore difficult to reconstruct the character of the forecourt in this phase. SU1020 was only partially excavated near its eastern side to determine its stratigraphic position[4].

Underneath the collapsed rubble from the temple steps lay a fill (SU 1032) of loose dark soil with brick and tile fragments, granite fragments and stones (mostly shale). In the western section, a layer (0.05/0.07m thick, 1.20m wide) of grey-yellowish granite is visible (Fig. 22). The possibility of interpreting it as an external surface has been excluded because of its inconsistency; more likely, it was deposited during the disruption of granite blocks caused by robbing.

Within the fill of pit SU 1020, many large blocks and fragments of granite were collected: the largest squared blocks (0.35 by 0.20 by 0.40m; 0.45 by 0.23 by 0.40m; 0.30 by 0.20 by 0.15m) was found at the bottom of the pit (two in the SW corner, one embedded into the southern edge, Fig. 23).At the bottom of this pit, a layer of red-orange mortar was found (SU 1025). In some parts, the well-preserved surface seemed polished and seemed to preserve the imprints of block laid on it (see Fig. 23). This has been interpreted as a preparatory levelling layer for the surfacing of the square. It is, therefore, possible that it was more or less the original level of the external surface This sector of the forecourt in front of the temple should be correlated to the sector investigated in the SE corner of the extended excavation trench, where other traces of what is thought to have been the paving of the square have been detected (*infra*). Here, a second robbing trench was also identified (SU 1049). This trench was filled with many small fragments of pulverized granite (SU 1046) mixed with stones of different dimensions and a few fragments of ceramic building material. It was partly overlain by SU 1021. The fill of the robbing trench contained finds from a wide time period, and so if the two events are related, the robbing has a *terminus post quem* in

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[4] The northern section of this pit is shown in Fig. 21.

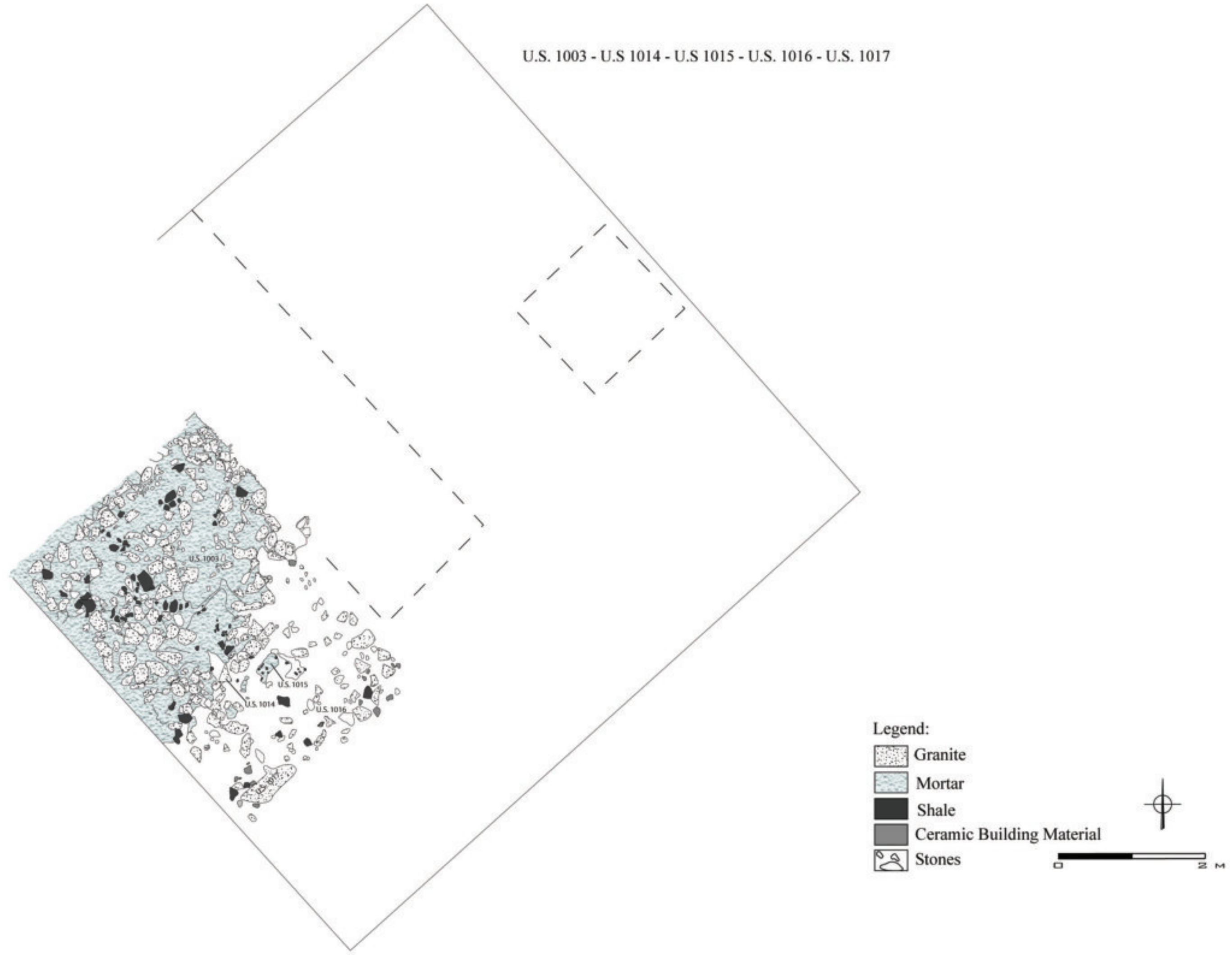
U.S. 1003 - U.S 1014 - U.S 1015 - U.S. 1016 - U.S. 1017
U.S. 1003
U.S. 1015
U.S. 1014
U.S. 1016
Legend:
Granite
Mortar
Shale
Ceramic Building Material
Stones
0
2 M

Fig. 20 *Ammaia*, Forum. Overlay of the SUs of the supporting core of the temple steps (© *Universidade de Évora - Fundação Cidade de Ammaia*).

the modern period. Between the preparatory level SU 1025 and the robbing pit SU 1046, there was a brown earthy layer, called SU 1031, which was covered by *opus caementicium* (SU 1016).

N of robbing pit SU 1049, some remains of a compact granite layer were identified. This layer was characterized by imprints of robbed blocks. The ghost blocks have been numbered as SUs 1050, 1053, 1059 and 1060 as established on the basis of the traces preserving decayed material; they are all imprints of granite blocks cut by SU 1049.

The layer SU 1053, which underlay SU 1024, was located S of wall SU 1044 and was composed of decayed crumbled granite and earth (Fig. 24). The imprint SU 1059 belonged to a block abutting SU 1051 and had a rectangular shape of 0.55m by 0.77m. The print SU 1060, which was only partly visible on two sides (on the northern side and on the western one), was located S of SU 1053. As we will see later in detail, all the aforementioned identified contexts suggest that, in this later phase, when the wall 1044 was already built, this area of the Forum was paved with granite blocks, taken away in a later period (which we cannot definitively determine). S of SU 1050, there was a concentration of mid-sized pebbles (cut by SU 1049), which was labelled SU 1058; its stratigraphic relationship with the imprints SU 1050, 1053, 1059 and 1060 is not clear and its function is unknown.

Some of the layers distinguished in front of the concrete core, on which the steps of the temple was likely resting, were removed with excavation, starting from the disruption of the forepart SU 1005, corresponding to SU 1019. In order to understand whether the structure SU 1044 continued westwards, the layers SU 1015 and the *opus caementicium* with terracotta mortar SU 1016 were also excavated and it was proven that the wall SU 1044 abutted the “flattened” extremity of the forepart SU 1005.

A crumbled granite layer, called SU 1052, was cut by SU 1049: it seemed to be more concentrated in the south-eastern corner of the Trench and, as we will see later, it looked similar to the preparation layer SU 1025, previously unearthed in the south-western corner.

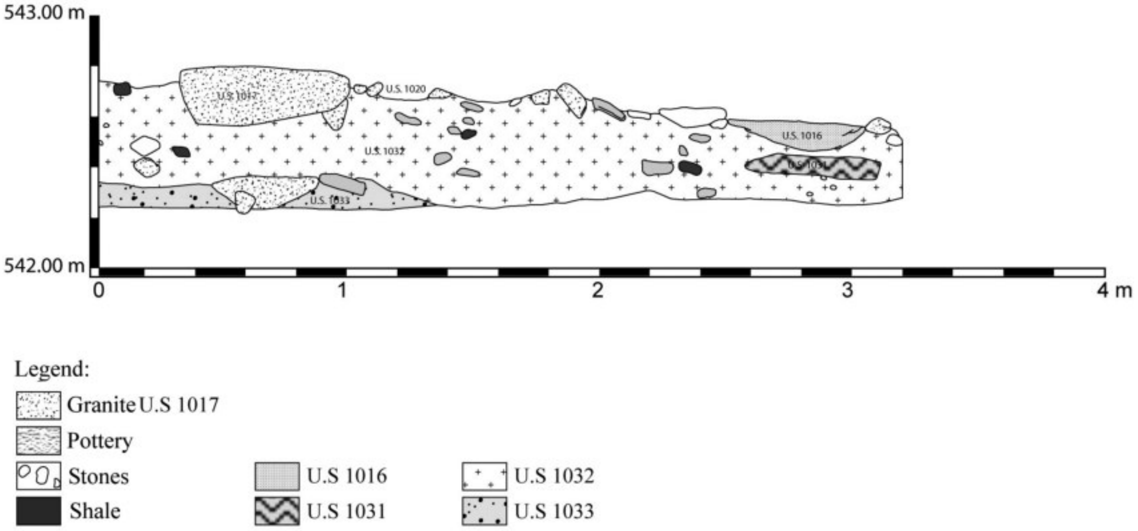

Fig. 21 *Ammaia*, Forum. Section of the area in front of the temple, with indication of the stratigraphy related to the two phases of the steps and the robbing activities.

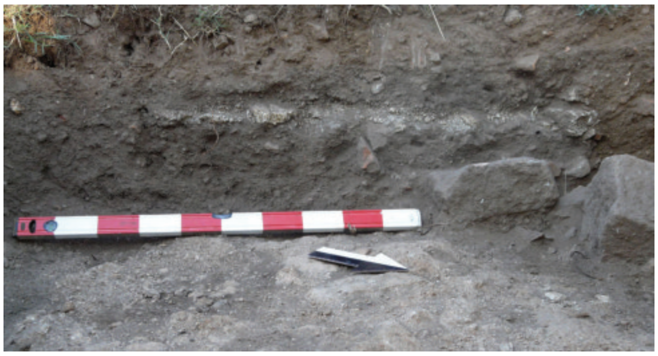

Fig. 22 *Ammaia*, Forum. The layer of granite visible inside the western section of the Trench 1, inside the pit SU 1020 (photo by C. Corsi).

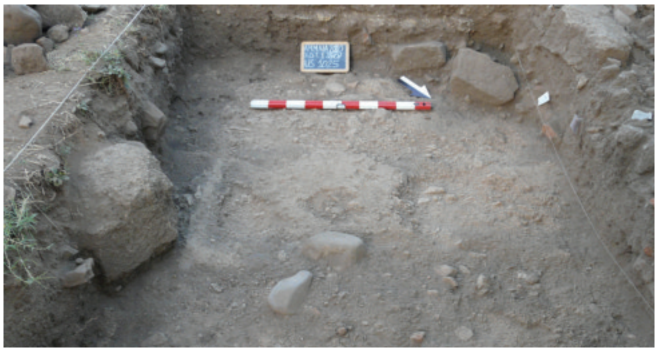

Fig. 23 *Ammaia*, Forum. View of the inside of the robbing pit SU 1020, after removal of the fill, seen from E. Large granite blocks are at the bottom and in the southern section. At the bottom, the flooring level SU 1025 is visible (photo by C. Corsi).

An orange earthy layer, numbered as SU 1056, was visible only discontinuously in the eastern part of the investigated area, likely because robbing had disrupted it. It abutted the eastern forepart SU 1005, the foundation walls SUs 1044 and 1051. It was identified as a probable preparatory layer used to level this part of the temple area, which was paved with the granite blocks. It was cut by a circular pit, called SU 1055, likely related to post-depositional events (a vegetation root hole?). The pit was additionally disturbed by post-depositional activities (agricultural or robbing) and was filled by SU 1057, and SU 1054.

One of the most interesting data acquired during the excavation 2011 was the presence of a beaten surface composed mainly of crumbled granite called SU 1061: it underlay the foundation of the eastern forepart 1005, meaning that it was built before the construction of the forepart. This layer seemed to be without mortar and pebbles. The SU 1061 overlay a reddish earthy layer (SU 1063); the latter might have been used to level this area before the forepart 1005 was built.

As we will see in detail further, we collected various finds from different layers: ceramic building material (SUs 1019, 1046, 1050, 1052, 1054), common ware sherds (SUs 1019, 1046, 1050), iron fragments (SUs 1046 and 1052), lead fragments (from SU 1046), only one fragment of *Terra Sigillata* (SU 1031) and six bronze or copper-alloy coins (SUs 1024, 1031, 1046 and survey). The deposit from which the greatest quantity of materials was collected was SU 1031: there were several pieces of ceramic building material (tiles, bricks and roof tiles), fragments of white marble of different dimensions, two iron nails, four iron fragments, a few fragments of pottery (four sherds of *ceramica cinzenta*, some sherds of common ware and one sherd of *Terra Sigillata*), one fragment of glass and two bronze/copper-alloy coins. Apart from the base of a *Terra Sigillata* plate from SU 1031, which has been identified as a Hispanic production datable to between AD 50 and 150, the only finds that could provide some chronological information are the aforementioned six coins, that are not presented here.

Nevertheless, as the fill of the robbing pit SU 1046 also contained a post-medieval/modern fragment of glazed pottery (*supra*), the three coins discovered inside it cannot be used to provide a *TPQ* of the fill.

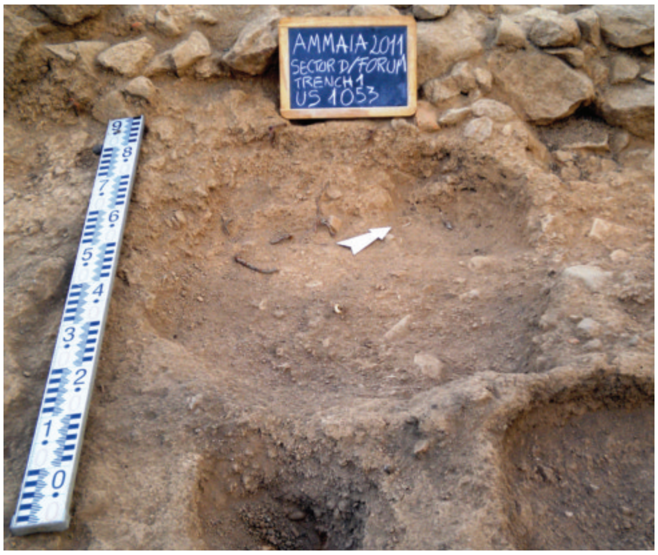

Fig. 24 *Ammaia*, Forum. Imprint of a granite block: SU 1053 (photo by S. Persichini).

The sequence of events, therefore, could be summarized as follows:

Phase 0 – Pre-building activities

No features have been found in this area for the pre-building phase.

Phase Ia –Setting of the area for the construction of the temple

SU 1061: beaten layer of crumbled granite. It overlay:

SU 1063: reddish earthy layer (without pebbles).

Phase Ib –Construction of the temple

SU 1007: foundation of the podium, dry masonry of pebbles of small/medium size.

SUs 1005 and 1037: foreparts of the temple, built with two facing walls of dry masonry of medium-size pebbles, normally flat pebbles tidily displayed, containing a fill of pebbles of similar dimensions without mortar.

SU 1001: core of *caementicium* of the temple podium, laid in several phases with mortar and stones (granite, pebbles and shale) of medium size.

SU 1002: frontal wall in *opus incertum* of the temple podium, composed of medium-sized pieces of granite and quarzite, bound with mortar.

SU 1014: small wall of granite blocks laid without mortar, interpreted as containing wall of the steps, composed of stones of medium size and a few pebbles; orientated SW/NE, thickness of *c.* 0.20m.

Phase Ic –First construction of the temple precinct

SU 1013? small square foundation of large granite blocks, stones of medium size placed along the perimeter and stones of smaller size in the central space, all laid without mortar.

SU 1051: foundation of SU 1013. Its facing was composed of mid-sized granite stones, bounded by a yellowish mortar; nucleus of pebbles, small stones, small fragments of broken granite, a low quantity of shale and yellowish mortar. Its visible portion measured 0.86m by 1.67m, but it extended beyond the limits of the excavation trench.

Phase II –Alteration to the two foreparts and raising of the level of the forecourt in front of the temple

SU 1045: destruction activity of SU 1005.

SU 1019: layer of destruction made of pebbles derived from the shortening of the forepart. These debris were left onsite to support the steps of the temple.

SU 1004 and SU 1038: layers of white mortar, large pebbles, fragments of ceramic building material, pieces of quartzite and characteristic small/medium-sized pebbles of yellow limestone sealing, respectively, the surfaces of structures SU 1005 and SU 1037.

Phase III –Remake of the forecourt in front of the temple

SU 1023: deconstruction and levelling of the foundation SU 1013.

SU 1044: containing/foundation wall, built in the trench SU 1048. White and loose mixed with stones of medium and smaller size and a few pebbles. The wall was parallel to the short side of the podium (SW/NE); its length was *c.* 4m and its thickness was *c.* 0.50m.

SU 1043: Layer composed of brown earth and gravel, on which SU 1009 was laid.

SU 1009: draining floor composed of gravel and pebbles of small dimensions and small fragments of shale.

Phase IVa– Last (?) renovations in the area around the temple

SU 1011: fill composed of silty sand mixed with medium-sized pebbles, stones, ceramic building material, a medium-sized fragment of white marble (0.12 by 0.07 by 0.05m) and some dating materials.

SU 1008: beaten floor composed of compacted granite rubble. It partially covers SU 1009.

- obliteration of the base SU 1051.

Phase IVb – Repaving of the area in front of the temple

SU 1025: preparatory levelling layer for the surfacing of the square. Probably equal to:

SU 1052: crumbled granite layer. Probably equal to:

SU 1056: orange earthy layer, visible only in isolated locations where robbing activities had exposed it.

SU 1047: sterile loose layer interpreted as back-fill of the area in front of the temple, overlying SU 1025.

SU 1031: brown earthy layer, covering SU 1025, SU 1052 and 1056. it was composed of many broken granite pieces of different dimensions, some shale and limestone fragments and terracotta fragments.

SU 1017: block of granite interpreted as pertaining to the delimiting wall of the steps/ramp or to the lower steps of the temple itself.

SU 1003: core in *opus caementicium* of the temple steps: loose earthy layer with some fragments of ceramic build-

ing material (tiles), small pebbles and rare patches of mortar. It partially covers the:
SU 1006: inconsistent earthy layer with some fragments of ceramic building material (tiles), small pebbles and rare patches of mortar.
SU 1016*: opus caementicium* covering 1031.
SUs 1050, 1053, 1059 and 1060: imprints of granite blocks left on the preparatory layer for a floor of the forecourt of the temple (leaning against SUs 1044 and 1051).
Phase V – Abandonment and disruption of some structures
SU 1055: vegetation root pit? Dimensions: 0.27m (diam.), 0.15m (depth). It was filled by:
SU 1054:dark brown sandy layer, and:
SU 1057: compact earthy layer mixed with pebbles.
SU 1023: dismantling of the base SU 1013, composed of stones of medium and smaller size, a few fragments of granite and some limestone.
Phase VI - Robbing
SU 1012: robbing of the temple podium granite blocks. Connected (?) with:
SU 1010: rubble layer composed of mostly broken fragments of granite, tiles, pebbles and larger stones, interpreted as a robbing layer, visible above most of SU 1009, related to the robbing of the granite ashlar blocks used for the facing of the temple podium?
SU 1020: large robbing trench, characterized by the presence of granite blocks broken pieces and lumps.
SU 1021: post-depositional brown earthy layer overlying the robbing trench SU 1046.
SU 1024: deposit of granite and earth overlying the layer where the paving blocks of the square were laid.
SU 1049: robbing trench filled by:
SU 1046: filling of the robbing trench SU 1049, SE of the temple podium. The peculiar grey colour is given by the presence of many flakes, lumps, small fragments and pulverized grains of granite; there are also some stones of different dimensions and some ceramic building material.

The matrix of Trench 1 and Trench 2 is presented at Fig. 25.

When we link the above presented relative phasing to the data from the study of the finds we can propose the following general chronology for the events. Phase I with the preparation of the terrain and the construction of the temple and its precinct can be dated to the Julio-Claudian period. Phases II and III, which imply a structural adaptation of the foreparts of the temple and a refurbishing, involving the replacement of a possible monument by water basin(s) near the temple, are most probably of Flavian date. Phase IV, consisting of a repaving of the square in front of the temple, might well be contemporary or extend into the Trajanic period. For the date of the abandonment of the temple, indicated by phase V, there are no precise archaeological data available. It is likely that some form of stone robbing (phase VI) started very early and extended well into the twentieth century.

Trench 2

As anticipated in the program of new excavations around the Forum temple, we included a re-examination of the trench in the SW corner of the temple podium. This irregularly shaped trench was opened in 1995 under the direction of J. Oliveira. Its dimensions were approximately 2.90 by 2.15 by 5.20 by 1.50m.

First, we proceeded with the cleaning of the northern, western and southern sections.

The western forepart (SU 1037) was only partially visible, but it was clear that it went through the same modifications as its eastern counterpart. Originally, it was built with dry masonry of large pebbles, its central part was then covered with a *caementicium* layer (SU 1038) similar to that which covered SU 1005 (SU 1004) and was characterised by the presence of small yellow limestone pebbles (Fig. 26). Surrounding this forepart, no paved surface was detected, but many more disturbances were observed. Here, the abandonment level was clearly visible in the southwestern section (SU 1034), characterised by a thick layer of loamy earth mixed with rubble (stones, pebbles, pieces of granite and many fragments of tiles and bricks of small/medium dimensions, whose margins were visibly abraded).

It is likely that this layer built up slowly with colluvium material coming from the slope (Nelson Almeida, a geologist who contributed to the interpretation of the sections of the excavations, estimated the time needed was 50/60 years). Above this level of abandonment, the collapse of the temple took place (SU 1030): a layer, 0.30/0.40m thick, composed of reddish earth and large fragments of roof and floor tiles, bricks, pieces of shale slabs and granite blocks was deposited on the western side of the podium, following the natural slope. Other colluvium built up on the top surface of this rubble (SU 1036), in this case with a much poorer content of archaeological materials.

In a later phase, several cuts intruded into these layers. Of some of them, only the bottom was visible within the excavation trench, as it was "inherited" from former excavations (SUs 1039 and 1041), while others were visible in the northern and eastern sections of the Trench. As they were not fully excavated, we completed the removal of their fills, reconstructing the stratigraphic relationships between them: the most recent pit was SU 1026, filling the cut SU 1027. The latter intercuts the pit fill SU 1029 and its cut SU 1035. The layer SU 1028 overlay the surface of the fill.

These pits are clearly robbing pits; they were later filled with rubbish and food refuse (several animal bones were collected).

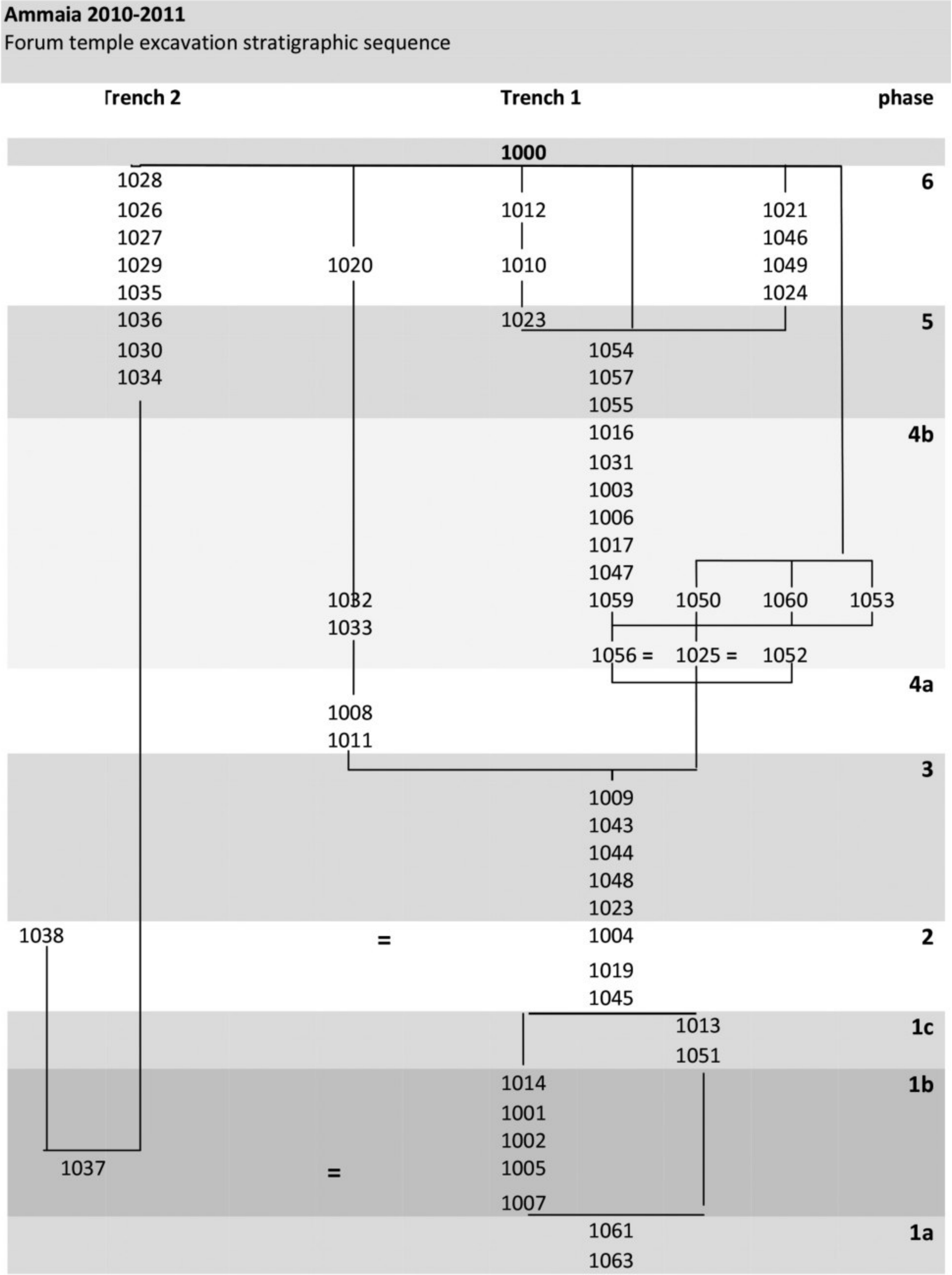

Fig. 25 Matrix of the temple area, with indication of the chronological phasing (elaboration C. Corsi).

Discussion and summary

Although the foundation SU 1051, the eastern forepart SU 1005 and the wall SU 1044 have the same SW/NE orientation, they belong in all probability to different periods. In fact, the information acquired by stratigraphic excavation confirms that there were two building phases in the temple area. The foundation SU 1051 and the base SU 1013 built on it were related to the first construction phase: they are part of the same monument, perhaps with a quadrangular shape, which could have been the base for a statue (Fig. 27). On the basis of the geophysical survey data interpretation (*infra*), it can be suggested that there was a symmetrical monument on the opposite corner of the temple. The eastern monument was built before the steps were shortened, and before the square was paved with something generating the prints of granite blocks that were discovered during the last season. This paving abutted SU 1051 and clearly belonged to a later building phase. It is also possible that SUs 1061 and 1063 represent a preparatory level for an earlier floor that paved the Forum square in the first building phase.

In a second building phase, what has been interpreted as a foundation/containing wall (SU 1044) was built, probably in order to contain the draining level SU 1009, which was contemporaneous with it. The fact that SU 1044 abutted both the foundation wall 1051 and the eastern forepart 1005 confirms that this wall was erected later than the other two structures. It is plausible that when SU 1044 was constructed, both SUs 1051 and 1013 were intentionally destroyed. This might also explain why the draining level SU 1009 was laid down on the north-eastern corner of SU 1013. At the same time, the southernmost part of the forepart 1005 was shortened. Since granite imprints SUs 1050, 1053, 1059 and 1060 abutted wall 1044, it is conceivable that, after building this wall, a new pavement made of granite blocks was placed S of the temple; in this second phase, the granite blocks were likely positioned against the forepart.

With regard to SU 1009 connected with the anomaly visible in the GPR survey (*infra*), it belongs to the second building phase of the temple area. In fact, as anticipated, it was laid down on the north-eastern corner of the base SU 1013 and so it must be built later than (and built against) SU 1044. It can be assumed that, when that monument was obliterated, the draining level SU 1009 was possibly used to place a basin and, as suggested by the results of the geophysics, it is plausible that there were two symmetrical water tanks with a possible rectangular shape on the opposite corners of the temple area (Fig. 28; *infra*: chapter I.4).

C.C.

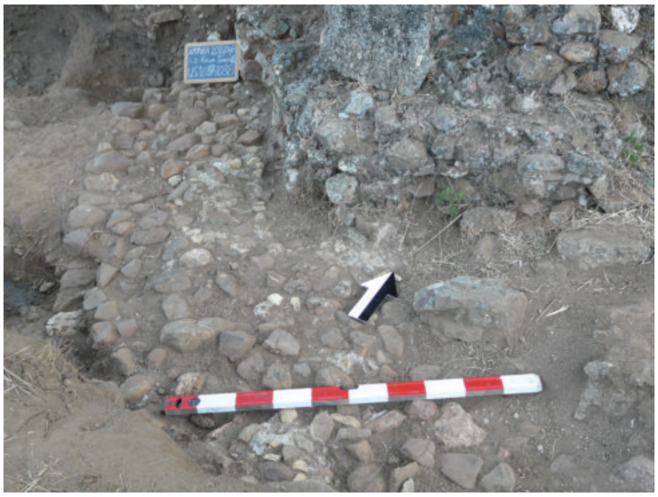

Fig. 26 *Ammaia*, Forum, Trench 2. View from the S of the western forepart SU 1037, originally built in dry masonry of large pebbles and later truncated and covered with a mortar layer SU 1038 (photo by C. Corsi).

b The portico area

Strategy and methodology

The excavation of the portico area was essentially intended to continue the work of the early years, and concentrated on several unfinished excavation squares in the north-eastern corner of the portico (see Fig. 10). The main research goals were the establishment of the: complete stratigraphic sequence, phasing of the activities in the portico and Forum area with special interest in the features of the original building phase (such as the existence of a possible cryptoporticus, floors and pavements, etc.), relationship between the internal Forum area, the portico building and the rest of the town, the abandonment of the Forum area, and the nature of obvious colluviation in this sector of the site.

The numbering scheme for the areas of the previous excavations was maintained (squares A803, D903, D904, D905, D1003), except in the case of the squares D1101, D1201, A1001, A1101, where the baulks between the square trenches were already removed during the earlier excavations and they were formed into a single trench, named P1.

The field operations, after a preliminary clearance of intrusive vegetation in the area, were carried out in the summer of 2010. The excavation was directed by Frank Vermeulen and supervised by Dimitrij Mlekuz and Devi Taelman. Additionally, the excavation team consisted of eight archaeology students (Belgian, Portuguese and American) and of personnel from the *Fundação Cidade de Ammaia*. The archaeological intervention was essentially limited to the recording of the sections exposed by the previous excavation activities. In squares A904 and D905, where only the topsoil was removed during previous excavations, the stratigraphic relationships between the wall rubble, portico walls and collu-

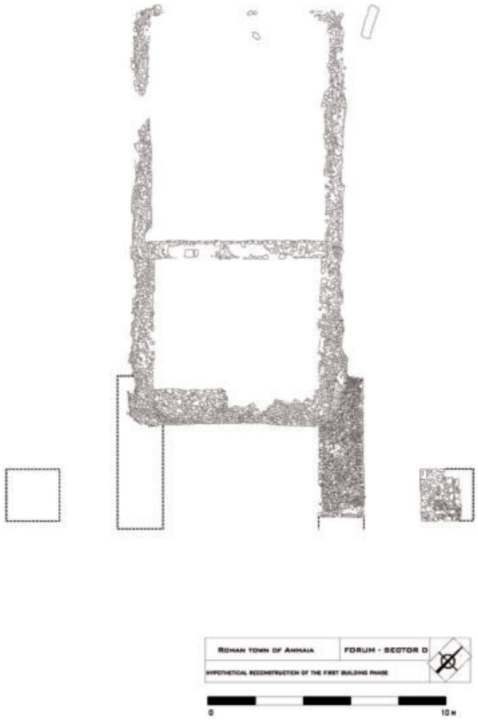

Fig. 27 *Ammaia*, Forum. Hypothetical reconstruction of the first building phase of the Temple area (elaboration S. Persichini after © *Universidade de Évora - Fundação Cidade de Ammaia*).

vium layers outside and inside the portico were recorded. In trench P1, we recorded the exposed sections (sections 1, 2 and 3) and excavated a 2m-wide trench along section 1 to reach the natural soil and record the whole stratigraphic sequence inside the portico building. In square A803, we excavated a 2m-wide trench down to the natural soil along the recorded section 4. The same process occurred in squares D1003 and D903, where we excavated a 1m-wide trench to reach the natural soil along section 5 (in D1003) and section 6 (in D903) (Fig. 10).

Site phasing sequence

Sixty-six contexts or stratigraphic units (SU) were recorded during the 2010 portico excavations that could be grouped into seven distinct phases. These seven phases, for which we will propose some chronological indications further, give a general overview of the history of this part of the site; they can be summarized as follows:

Phase 0 – Pre-occupation: natural soil or geological substrate of the site.

Phase I – Building of the cryptoporticus: Phase I comprises a major building event with the foundation and construction of the Forum complex. It includes the preparation of the surface (see: cut for the NE wing of the portico and cuts for foundation trenches) and the building of the portico walls.

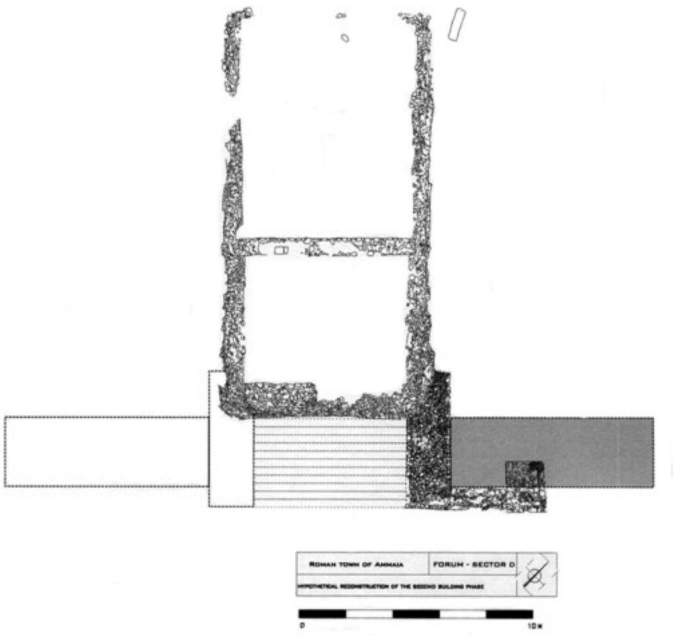

Fig. 28 *Ammaia*, Forum. Hypothetical reconstruction of the second building phase of the Temple area (elaboration S. Persichini after © *Universidade de Évora - Fundação Cidade de Ammaia*).

Phase II – Filling of the NW wing of the portico: this phase can be observed only in trenches D1003 and P1 (north-western part) where a thick layer of culturally sterile material, in composition very similar to the original pre-building surface, was deposited. The concrete revetment in area P1 (SU 2044) can also be attributed to this phase. Phase 2 should be interpreted as the filling and reinforcement of the NW wing of an original cryptoporticus construction that was never used as such, and, therefore, functioned only as a simple one-level portico.

Phase III – Occupation activities inside the original portico building: these activities are documented in the trenches A803 and P1 as a sequence of clay deposits. Contexts in both areas can be correlated on the basis of their composition and stratigraphic position, indicating that they were traces of the same events that occurred in the single space of the NE wing of the Forum portico,

Phase IV – Late architectural modification of the portico: a small modification of the northern wing of the portico was documented in square A803, where a hastily built dry wall, perpendicular to the sturdy portico walls, separated the portico into two rooms. It was associated with a mortar floor.

Phase V – Abandonment and structural collapse: this phase consists mainly of dense deposits of roof tiles and wall plaster. In square A803, two layers of roof rubble, separated by a thick layer of clay with inclusions of roof tiles, were recorded.

Phase VI – Post-abandonment activities and colluviation: the important process of colluviation on the site is documented by a series of contexts that were encountered in most of the researched area and that consisted of transported soil material and smaller building material.

Phase VII – Recent activities: topsoil that covers the whole area. In trench P1, section 3, a shallow recent cut was filled with material similar to the topsoil.

The general matrix of the portico area is presented at Fig. 29.

Square A803

Square A803 was chosen for our intervention because of the thick sedimentation that revealed the activities inside the portico building and the life history of the cryptoporticus and Forum itself. We cleaned and recorded the western section (section 4, Fig. 30). A small, 2m-wide trench along the section was excavated to reach the natural soil. Section 4 was positioned entirely inside the portico building and thus recorded the sequence of events inside the NE wing of the cryptoporticus.

The sequence starts with the natural soil (SU 2075) into which the foundation trenches for the walls were cut (SUs 2048, 2060). These foundation trenches had vertical edges and were entirely filled with the foundation deposits, as no backfill deposits were identified. Patches of mortar on the surface of the natural soil might have been traces of these building activities. Since no traces of paving or traces of its destruction were identified, we assume that the floor of the cryptoporticus was not paved, but consisted of a trampled earthen natural soil surface (see Fig. 30).

Phase III consisted here of three layers. Especially intriguing was SU 2048, a very dark and organic deposit with small inclusions of charcoal. These layers (the others are SUs 2041 and 2049) should not be interpreted as three separate events but as a continuous process of accretion, the result of the life and use of the cryptoporticus with periodical cleaning, re-building and re-flooring. We may hypothesize that, at some point, this phase represented a different use for the cryptoporticus, perhaps as a living shelter for humans or a stable for animals.

A new function for the cryptoporticus is evident in Phase IV, where the portico space was divided into two rooms by a dry masonry wall. Simultaneously, a thin layer of mortar was laid on the floor. The discovery of an articulated animal skeleton (calf?) encountered during the old excavations (see above) and finds of a scapula and horn core in our excavation, under the mortar floor, might be associated with this phase and might be interpreted simply as the disposal of an animal carcass or perhaps as a foundation deposit.

The end of the use of the cryptoporticus is documented in Phase VI, with two rubble layers made up of floor tiles and wall plaster. This might indicate that the roof collapsed in two phases with an interval, or, less probably, that the upper roof-rubble layer (SU 2039) was a secondary deposit of material cleared elsewhere and dumped inside the cryptoporticus. In Phase VI, there is evidence of at least five events or processes of colluviation.

The stratigraphic units in this area can be summarized as follows:
Phase 0
SU 2075: compact reddish clay deposit with schist inclusion, natural soil.
Phase I
SU 2073: thin patch of mortar.
SU 2058: wall, external portico wall.
SU 2057: wall, internal portico wall.
SU 2081: foundation of wall SU 2058.
SU 2060: foundation of wall SU 2057.
SU 2048: cut, foundation trench for wall SU 2057.
Phase III
SU 2041: compact clay layer with mortar inclusions.
SU 2048: dark grey clay floor deposit.
SU 2049: brown clay floor deposit.
Phase IV
SU 2049: thin layer of mortar, floor.
SU 2059: wall, badly built dry wall.
Phase V
SU 2039: rubble layer, mainly roof tiles.
SU 2043: clay layer with some rubble, mainly roof tiles.
SU 2040: layer of rubble, mainly roof tiles.
Phase VI
SU 2035: colluvial layer.
SU 2036: colluvial layer.
SU 2037: colluvial layer.
SU 2038: colluvial layer.
Phase VII
SU 2008: topsoil.

Trench P1

Trench P1 was chosen as the main study area, as it opens a window on the relationship between the NW and NE portico wings and the *cardo maximus*, situated parallel to and immediately NW of the Forum complex. Trench P1 was the largest open area and was almost completely excavated in previous campaigns. Our work was limited to the recording of the southern (section 1), eastern (section 2), and part of the northern section (section 3) of the trench. Section 1 (Fig. 32) documents the sequence inside the cryptoporticus wing and can be correlated with the situation encountered in section 4 in square A803 (see above). Most phases of the portico stratigraphy are encountered here.

Phase 0 consists of a deposit of reddish clay with inclusions of decomposed shale. It was encountered only inside the cryptoporticus, although the old excavations outside the portico

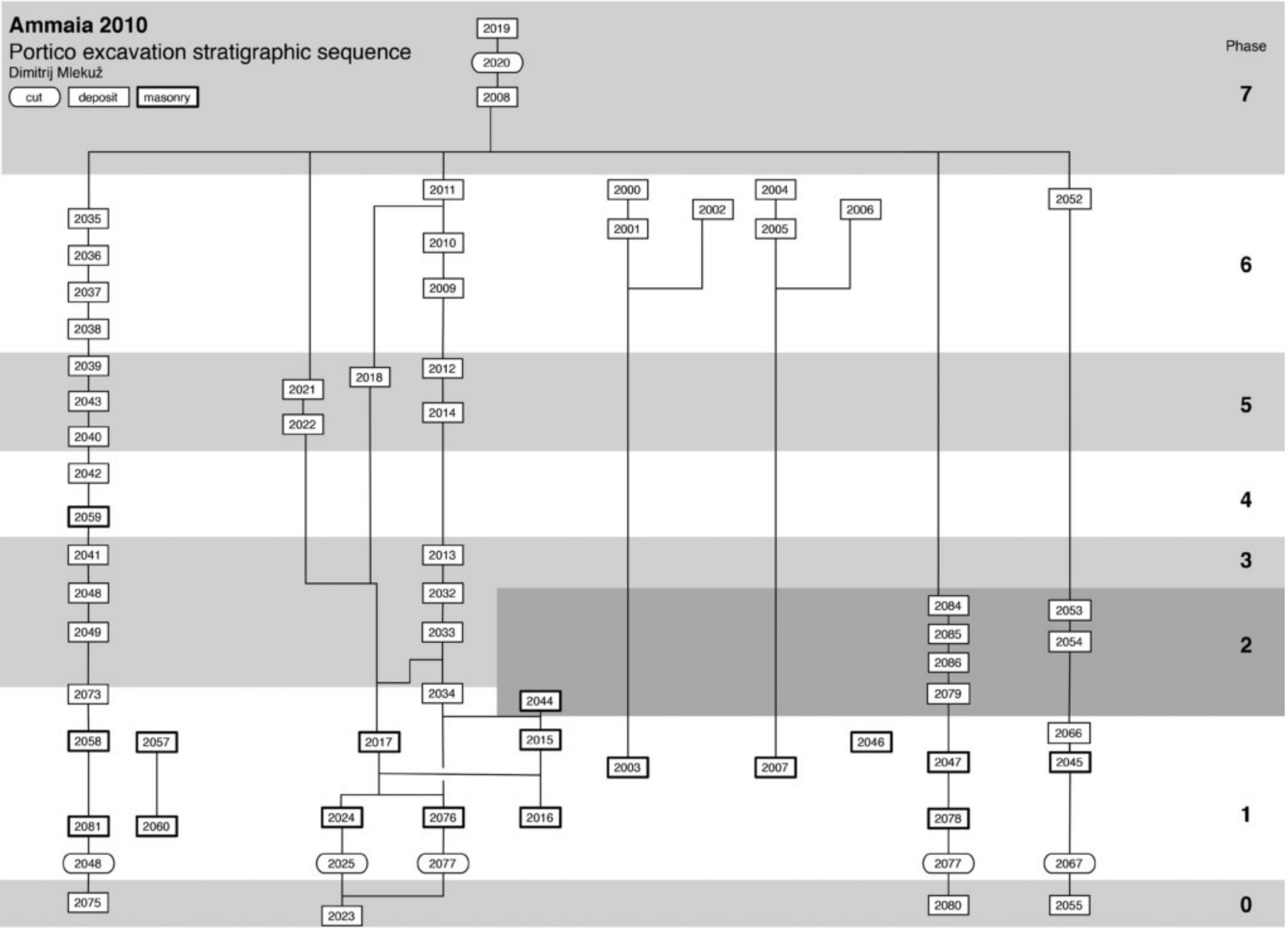

Fig. 29 Matrix of the portico area, with indication of the chronological phasing (elaboration D. Mlekuz).

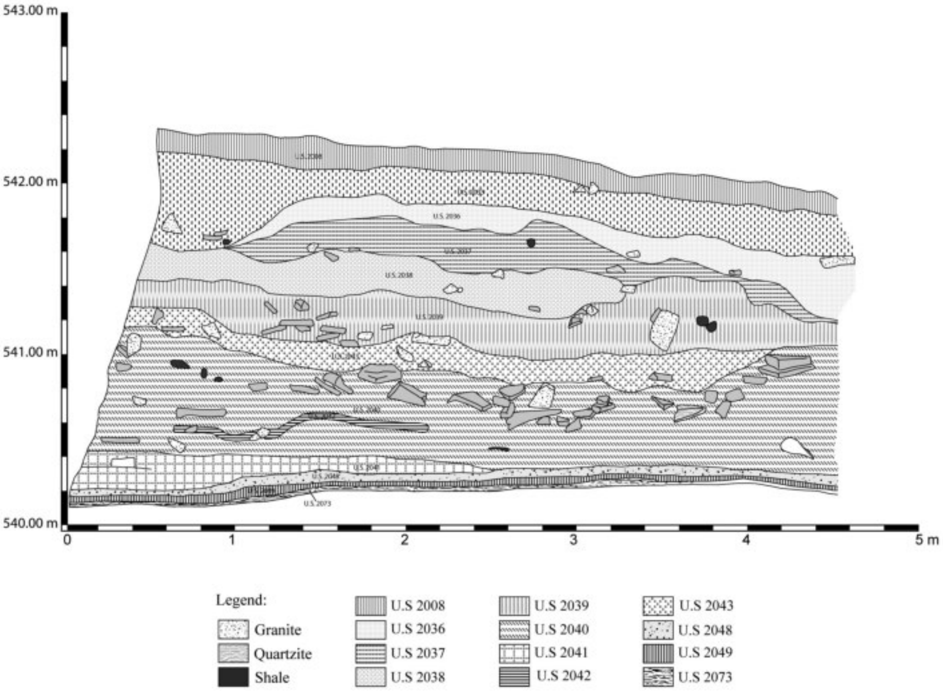

Fig. 30 *Ammaia*, Forum. Square A804: drawing of section 4 (© *Universidade de Évora - Fundação Cidade de Ammaia*).

reached deeper than inside. This might indicate that the original, pre-building surface had a considerable slope and was artificially levelled and terraced during Phases I and II.

Phase I events can be correlated with the situation in A803 and consisted of the building activity for the portico structures.

The only evidence of Phase II is a large concrete mass, build inside the northern-eastern wing of the portico (Figs. 10, 31). Although we first interpreted it as a (possibly later) reinforcement of the NW wing (necessitated, we thought, by problems with statics or slope stability and thus served better to support the pressure of the upper structures and roof near the corner of the whole building), we can now propose that it formed the substructure of a stairway leading from the portico to the *cardo maximus*.

In Phase III, the stratigraphic units in trenches P1 and A803 can be correlated directly on the basis of their position and composition. SU 2033 correspond to SU 2049 in A803, SU 2032 to SU 2043 and SU 2013 to SU 2013. SU 2033 was extremely thick in trench P1; the presence of horizons of mortar and plaster inclusions indicate that it formed as a result of a long process of accretion.

Phase V consists of major collapse events. Inside the portico, the roof rubble SU 2012 was too thin to be the complete collapse of the roof. In most of the section, only one layer of broken tiles was encountered. We expect that there was at least one episode of clearance of roof rubble, probably salvaging and collecting the intact roof tiles. SU 2014 consists of spatially limited rubble with wall plaster and appears to be simply a large heap of plaster and tiles left in the middle of the cryptoporticus. It may have been a spoil heap made during the scavenging episode. In this heap, large pieces of wall plaster, a fragment of marble, few whole roof tiles and at least one floor tile were found. The presence of floor tile might indicate that the portico floor was paved with floor tiles.

In the last phase (Phase VI) a convex-shaped cut made into the topsoil was recorded on section 3 (SU 2020 cut, SU 2019 fill) (Figs. 33, 34, 35).

The stratigraphic units in this area can thus be summarized as follows:
Phase 0
SU 2074: pre-building deposit, not excavated.
Phase I
SU 2034: thin patches of mortar.
SU 2015: W wall of portico.
SU 2016: N wall of portico.
SU 2076:foundation for wall SU 2017. Recorded on section 1, can be equated to SU 2024.
SU 2024: foundation for wall SU 2017. Recorded on section 3, can be equated to SU 2076.
SU 2025: cut, foundation trench for wall SU 2017. Recorded on section 3, can be equated to SU 2077.
SU 2077: cut, foundation trench for the wall SU 2017. Recorded on section 1, can be equated to SU 2025.
SU 2023: compacted deposit of large stones, road foundation or preparation deposit.
Phase II
SU 2044: wall, concrete reinforcement or revetment.
Phase III
SU 2013: compact clayish layer with inclusions of mortar.
SU 2032: thin dark grey deposit, floor.
SU 2033: thin clay deposit, floor.
Phase V
SU 2021: layer of stone rubble.
SU 2022: layer of mortar and rubble.
SU 2018: layer of stone rubble outside portico.
SU 2012: layer of rubble and roof tiles.
SU 2014: compact layer of wall plaster.
Phase VI
SU 2011: colluvial layer.
SU 2010: layer of transported rubble, mainly roof tiles

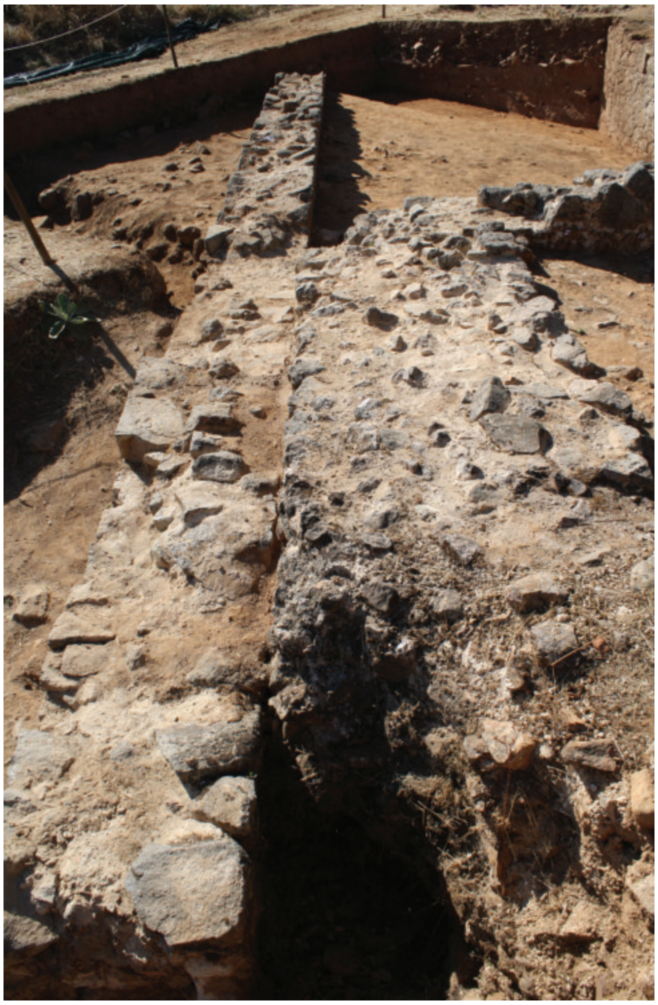

Fig. 31 *Ammaia*, Forum. Northern wall of the NE-wing of the portico (left) and reinforcement of the NW-wing or substruction wall for a staircase situated in the northern angle of the Forum portico (photo by F. Vermeulen).

and stone.
SU 2009: colluvial layer.
Phase VII
SU 2019: fill of cut SU 2019.
SU 2020: cut with concave slope and base.
SU 2008: topsoil.

Squares D804 and D904

Work in square D804 (see Fig. 10) was limited to the recording of the stratigraphy exposed by the old excavations. The extent of wall rubble found in the topsoil (SU 2000), consisting of large granite stones, was limited to the area of the Forum square, outside the portico. Our first hypothesis was that this reflects the process of colluviation in the Forum area. We expected the wall rubble to be transported downslope, when the inner portico wall (SU 2003) was breached and when the cryptoporticus started to be filled with colluvial deposits, spilling over the wall and forming a colluviated slope within the portico. A similar process was recorded in section 1 of Trench P1. However, this seems not to be the case, as the cryptoporticus was already filled in Phase II, probably soon after the building of the whole portico system (Phase I) (see square D1003). The absence of wall rubble inside the portico is still somewhat enigmatic. The situation in square D904 is analogous to square D804.

The stratigraphic units in the square D804 can be summarized as follows:
Phase I
SU 2003: wall, internal wall of NW wing of portico.
Phase VI
SU 2000: layer of large granite stones, wall rubble.
SU 2002: colluvial layer.
SU 2001: colluvial layer.

The stratigraphic units in the square D904 can be summarized as follows:
Phase I
SU 2007: external wall of NW wing of portico.
Phase VI
SU 2004: layer of large granite stones, wall rubble.
SU 2005: colluvial layer.
SU 2006: colluvial layer.

Square D1003

Square D1003 is located inside the NW wing of the portico. Section 5 was recorded on the eastern side of this trench. Along the section, a 2m-wide trench was excavated to reach natural soil. Section 5 (Fig. 36), together with section 6 (Fig. 37), in square D903, forms a general section, which connects the interior of the portico with the Forum square.

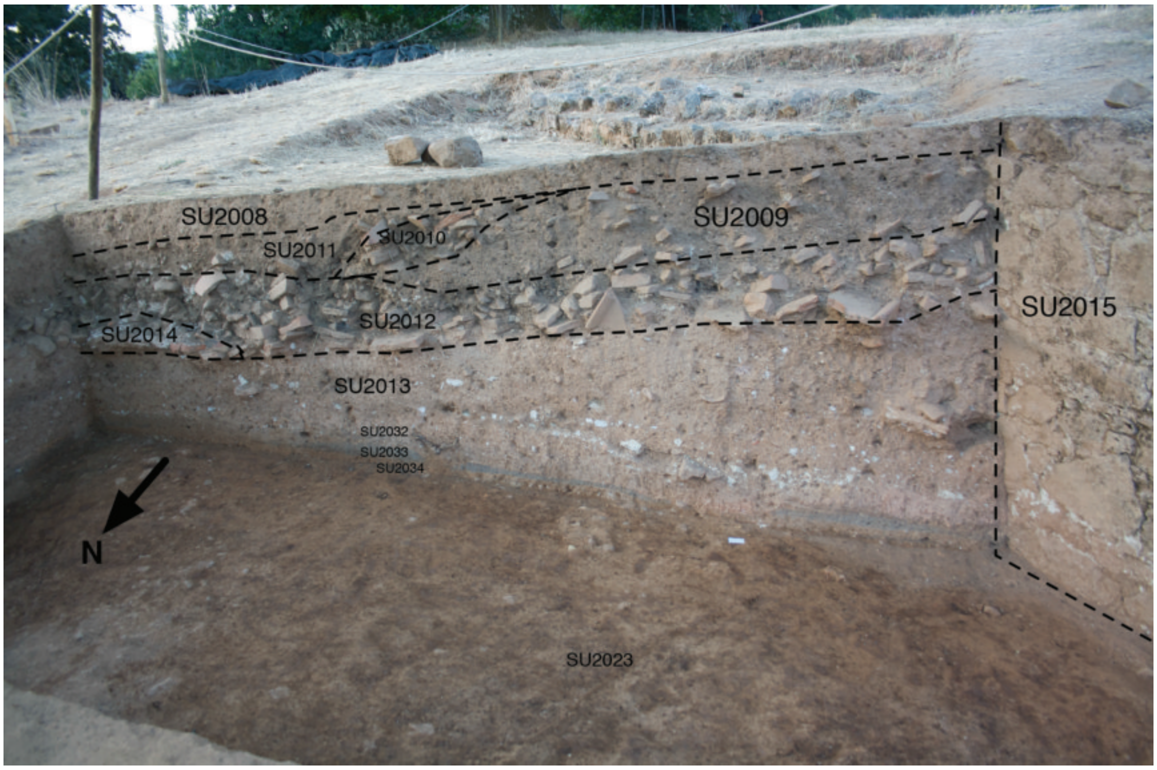

Fig. 32 *Ammaia*, Forum. Photograph of section 1 with marked stratigraphic units (elaboration D. Mlekuz).

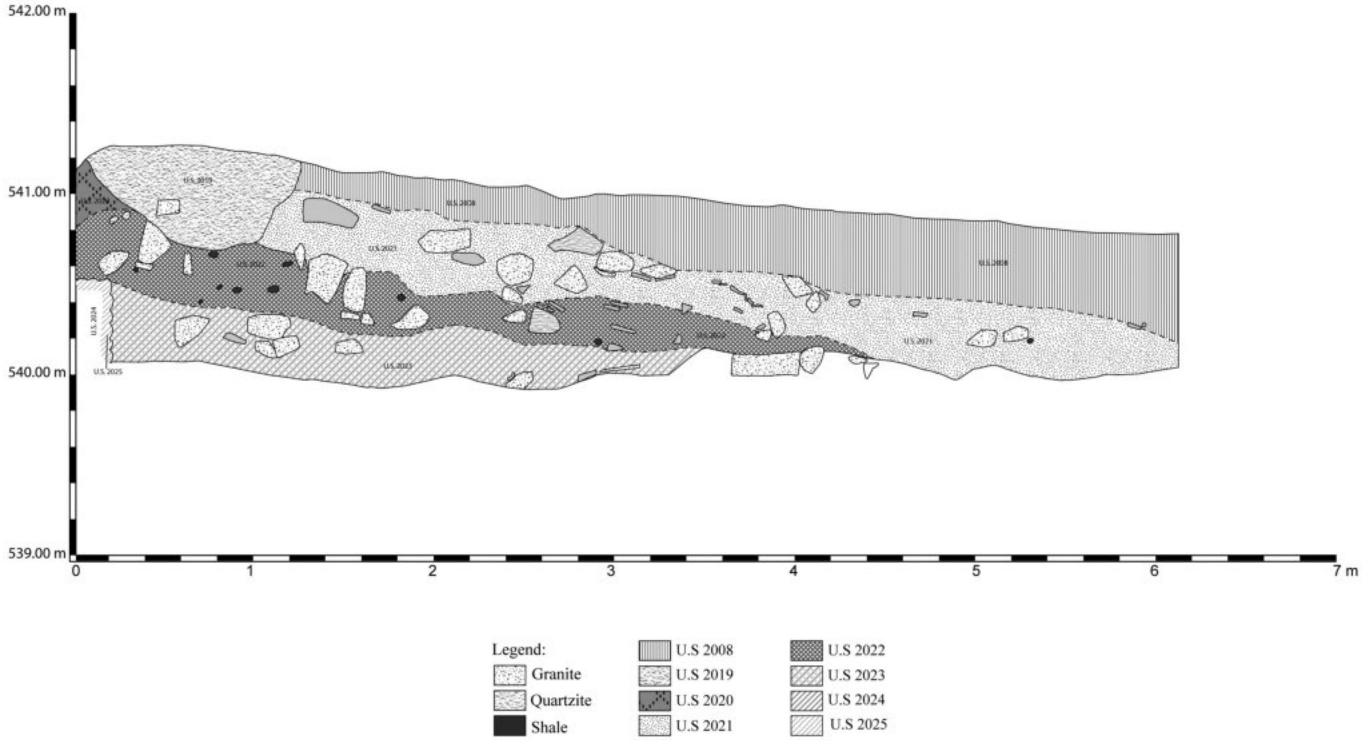

Fig. 33 *Ammaia*, Forum. Drawing of section 3 in area P1 (© *Universidade de Évora - Fundação Cidade de Ammaia*).

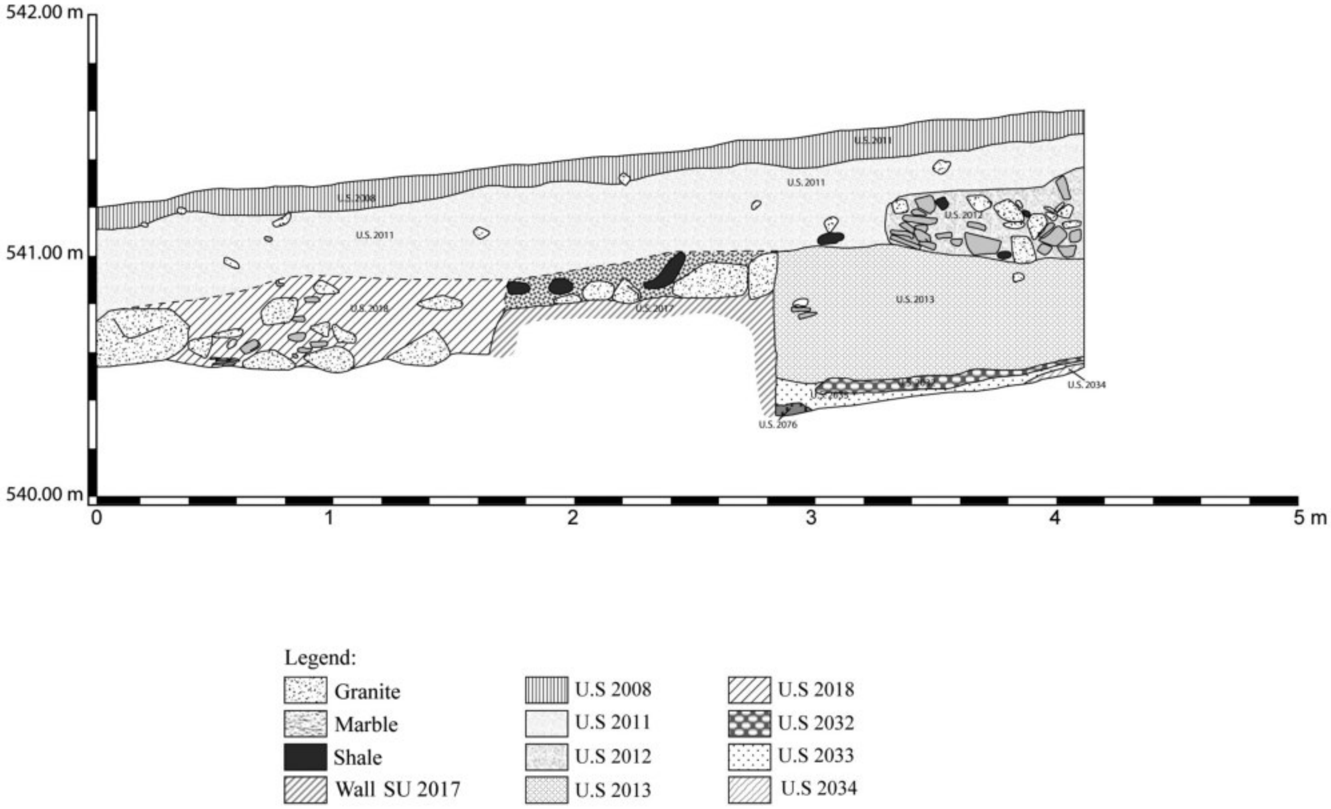

Fig. 34 *Ammaia*, Forum. Drawing of section 2 in area P1 (© *Universidade de Évora - Fundação Cidade de Ammaia*).

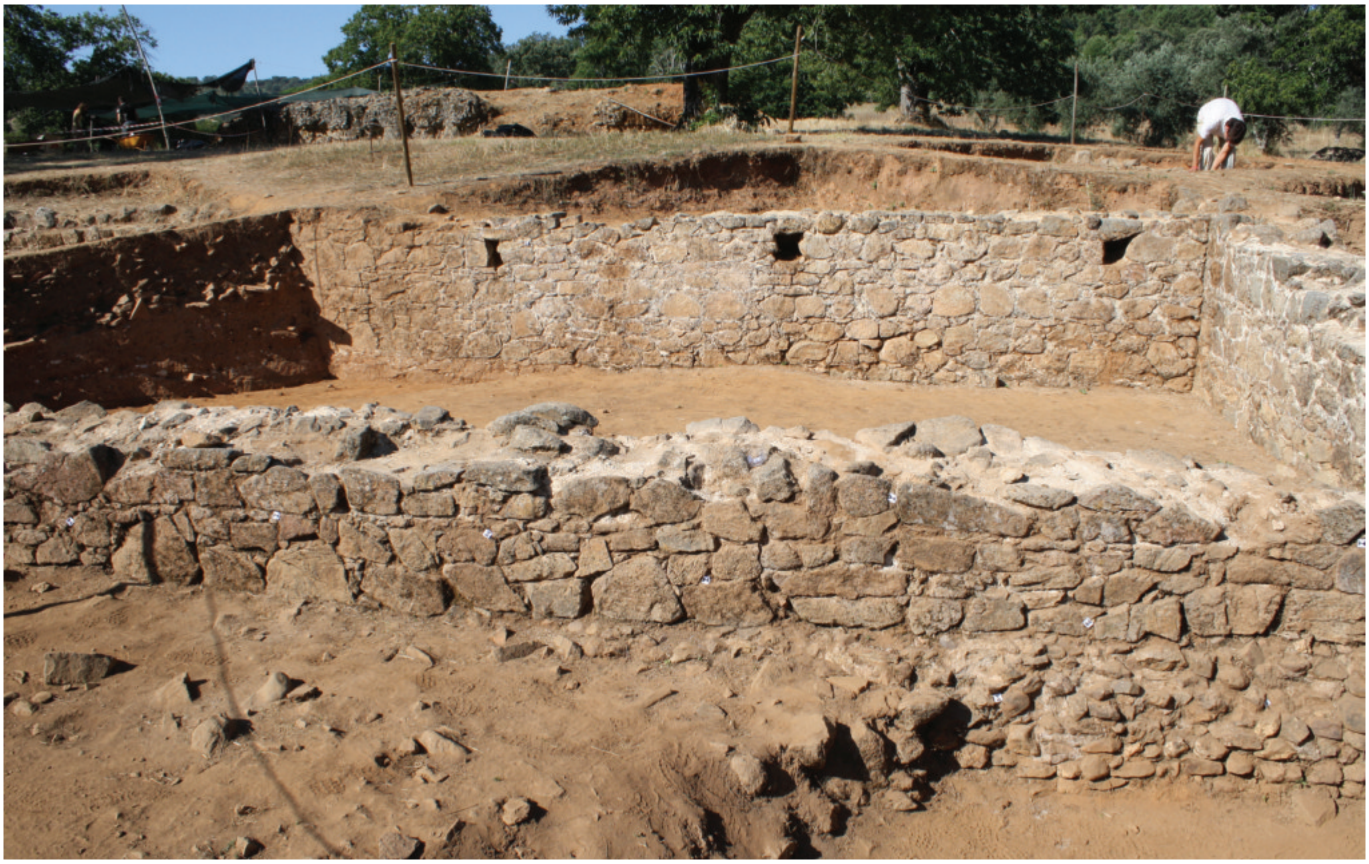

Fig. 35 *Ammaia*, Forum. General view from NE towards the parallel outer walls of the cryproporticus NE wing during excavation in area P1. Remark the difference between foundation and upstanding wall in the facing of the eastern wall (where the debris layer of the spoliated so-called *cardo maximus* has not been fully excavated) and the inner facing of the western wall with its three holes for scaffolding beams left during construction work (photo by F. Vermeulen).

Phase 0 consists of a reddish compact clay layer with inclusions of shale, interpreted as the natural soil.

In phase I, a large cut for the cryptoporticus, together with foundation trenches along the edges of this cut, was made into this pre-building surface of Phase 0. These were filled with the foundation for wall SU 2047. The foundations (SU 2078) inside the portico were relatively wide, possibly indicating that wall SU 2047 was built against the cut surface. This is further supported by the lack of scaffolding post holes inside the portico, indicating that the building level inside the portico was deeper than the outside. On the surface of the cut we encountered an irregular deposit of large quartzite stones.

Phase II is represented by three clay layers with inclusions of decomposed shale that complete the fill of the cryptoporticus. No cultural material was found in these layers. The presence of lines of slanted stone in layers SU 2085 and SU 2084 indicated that material was deposited from the Forum square area. The interpretation of these deposits is that of intentional fills of the NW wing of the cryptoporticus. On the base of their composition, we argue that these events were contemporaneous with or date to shortly after the filling and levelling of the Forum area as documented in square D903 (SUs 2053 and 2054). The reason why people filled the cryptoporticus, obviously soon after it was built, is still mysterious, but it could be connected with problems of statics and slope (in)stability.

The stratigraphic units in square D1003 can be summarized as follows:
Phase 0
SU 2080: reddish-brown decomposed slate deposit, pre-building deposit which can be correlated with SU 2055 in D903. Not excavated.
Phase I
SU 2079: layer, deposit of stones, floor.
SU 2046: external portico wall.
SU 2047: Forum-facing portico wall.
SU 2078: foundation for wall 2047.
SU 2083: cut, foundation trench for wall 2083, can be correlated with SU 2067 in D903.
Phase II
SU 2084: compact orange layer of clay and decomposed layer.
SU 2085: compact layer of clay and decomposed slate.
SU 2086: compact layer of yellowish clay and decomposed slate.
Phase VII
SU 2008: topsoil.

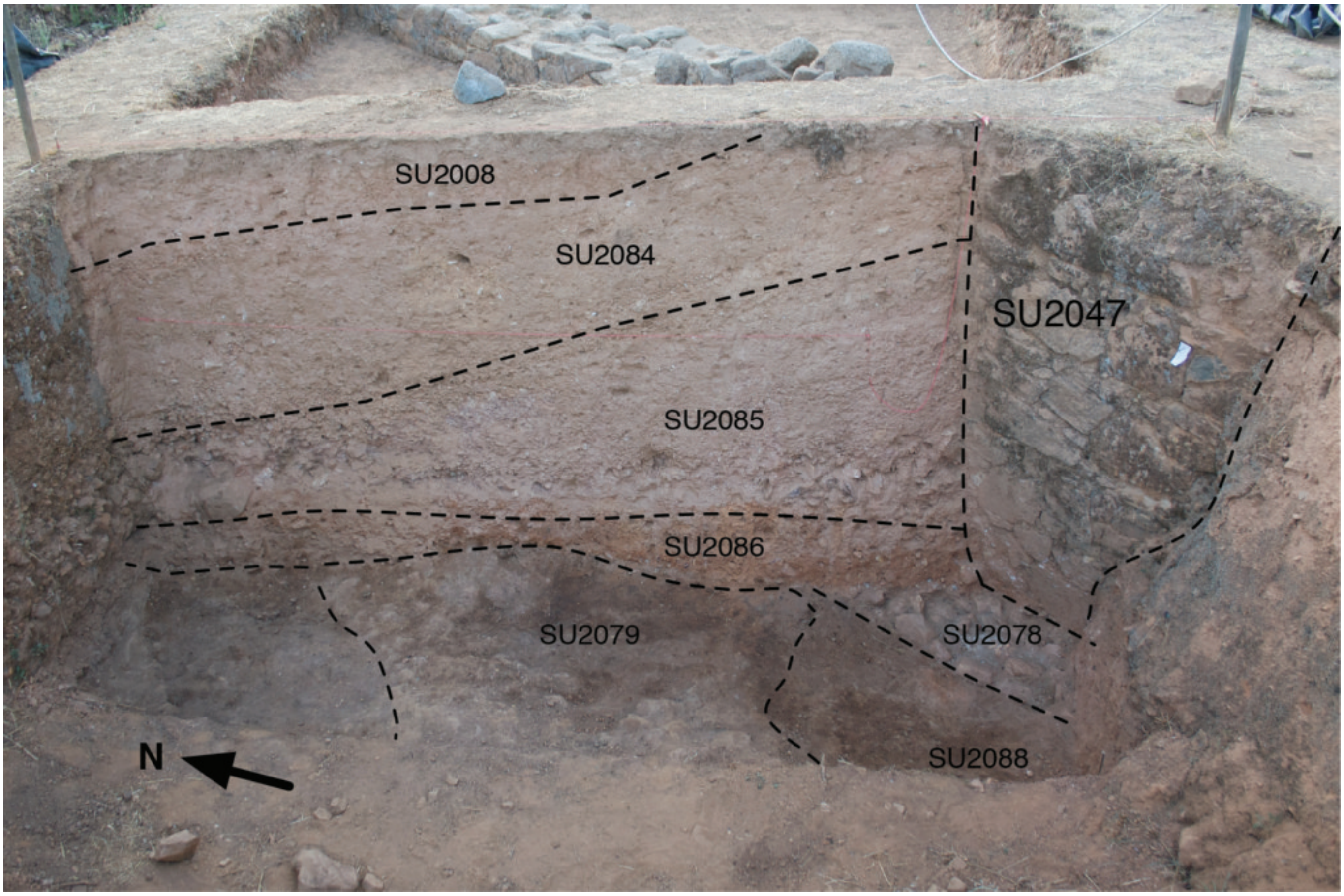

Fig. 36 *Ammaia*, Forum. Photograph of section 5 with marked stratigraphic units (elaboration D. Mlekuz).

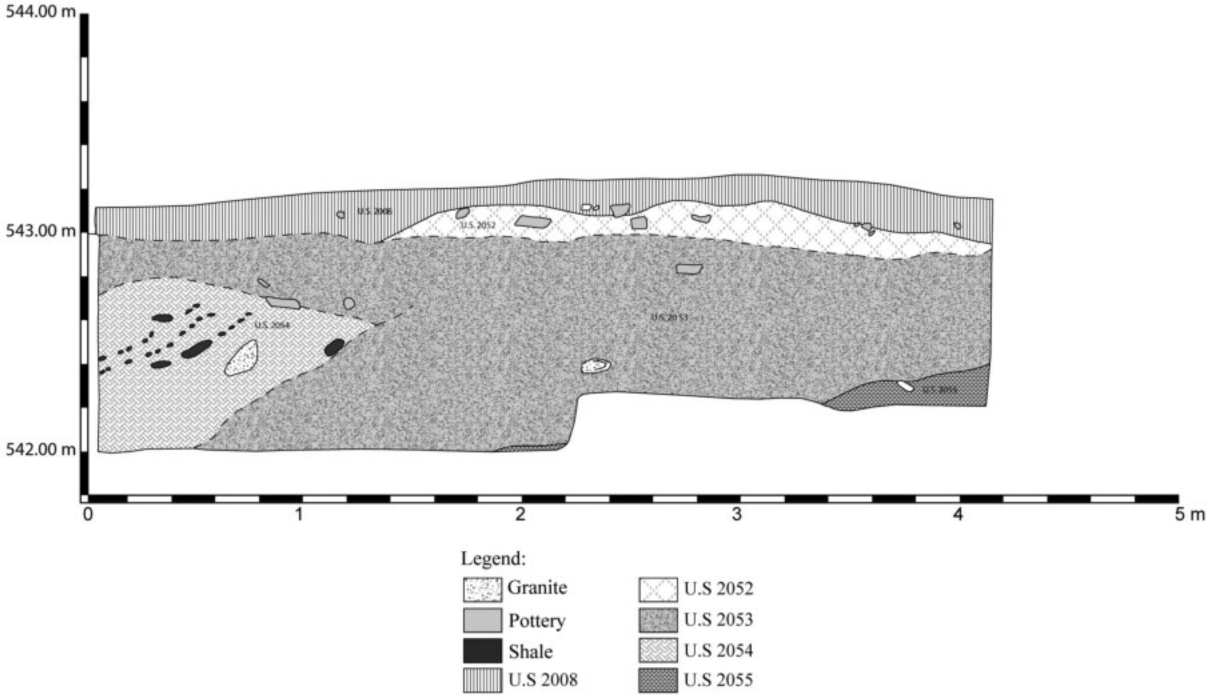

Fig. 37 *Ammaia*, Forum. Drawing of section 6 in square D903 (© *Universidade de Évora - Fundação Cidade de Ammaia*).

Square D903

In trench D903 we excavated a 1m-wide area along the eastern edge of the trench where section 6 was recorded. Section 6 and section 5 in D1003 record the section that connects the portico with the Forum square.

In Phase I, a cut was made into the pre-building surface (Phase 0) (SU 2067, correlated with SU 2083 in square D1003), and wall SU 2045 (the same as wall SU 2047 in square D1003) was built from the inside of the cryptoporticus against the cut. A small gap between the wall and the cut surface was backfilled with SU 2066. This strongly suggests that the wall SU 2045 (= SU 2047 in D1003) was built against the edge of the cut made for the cryptoporticus. The surface of SU 2055 was, therefore, the natural pre-building level, from where the portico was built. The putlog holes in the wall started approximately three courses (circa 0.5m) above the original surface. The original pre-building surface (SU 2055) was covered by two very compact deposits that abutted wall SU 2045 and that were composed of clay and decomposed shale. They contained no archaeological finds (SUs 2053 and 2054). We interpret them as a major event that filled and levelled the area of the Forum square. This event might be contemporary with the filling of the north-western wing of the cryptoporticus (Phase II) recorded in square D1003. The composition of these deposits was similar to that of the fill deposits in square D1003 (SUs 2084, 2085 and 2086). The natural, pre-building deposit (SU 2055 here and SU 2080 in D1003) indicated that the builders reused material excavated elsewhere during the preparation of the Forum square. The presence of lines of inclined stone inside SU 2054 indicated that the filling was a (relatively) gradual process. Therefore, SU 2054 can be attributed to Phase II and the preparation of the Forum terrace. It can be observed that the same brownish sediment was used for the fill of the temple podium, but this is only a visual observation, not yet supported by necessary analyses.

This event of active human interference with the topography of the terrain raised the elevation inside the Forum square (near this trench) by nearly half a meter. It was probably contemporary with the filling of the cryptoporticus as recorded in square D1003 (SUs 2086, 2085 and 2084).
The stratigraphic units in this area can be summarized as follows:
Phase 0
SU 2055: reddish compact layer of decomposed slate, can be equated to SU 2080 in D1003.
Phase I
SU 2066: clay layer with large stones, backfill deposit.
SU 2045: wall, same as wall 2047 in D1003.
SU 2067: foundation trench for wall 2045. Can be equated to SU 2083 in D1003.
Phase II
SU 2053: compact layer of clay and decomposed slate.
SU 2054: compact layer of yellowish clay and decomposed slate.
Phase V
SU 2052: colluvial layer.
Phase VII
SU 2008: topsoil.

General discussion and summary

The area chosen to build the Forum complex was located on a considerable slope, as is suggested by the elevation difference between the upper surface level of the natural soil in the different sectors of the building we have studied. Together with the topographic research and the coring operations, we can observe that the area where the Forum and its portico were built in the Roman period was characterised by a natural slope with a gradient of 8 to 10° from SW (upper) to NE (lower). The composition of the pre-building phase slope deposits was essentially clay with inclusions of decomposed shale, which is the underlying lithology of the general area. There are no indications of intense human intervention (e.g. settlement) prior to the construction of the Forum. The colluviated nature of the “natural soil” suggests, however, that older agricultural activity or deforestation (?) might have caused movement of clay mass from the Malhadais hill upslope.

The history of the portico sector, surrounding the religious part of the Forum, starts in the first phase, probably of Julio-Claudian date, with the cuts for the NW wing of the portico and for the foundation trenches for portico walls. While in the NW wing of the portico only very narrow, vertically cut foundation trenches were recorded, and the lower parts of the walls were built directly on the original surface, in the NE wing in spite of the fact that it is situated much lower according to the natural slope, a trench was excavated for the whole volume of the cryptoporticus, as two floor levels were planned here.

As has been remarked during earlier research (Mantas 2000) and as will be further elaborated in the section about wall structures (chapters I.5 and V.1), the construction of walls and foundations was done in a regular fashion. Generally, the robust foundation, slightly wider than the upstanding walls, was constructed with local river-worn quartzite and sandstone gravel and mortar. In places where observation was possible, the foundations were approximately 0.8m deep. The standing walls were made in an *opus incertum* with a facing of roughly dressed granite blocks of varying sizes, but generally positioned in sub-horizontal to horizontal layers. every 0.30m to 0.50m, the walls had horizontal courses constructed with flattish stones to preserve vertical stability. Subtle differences in the vertical spacing of the horizontal courses and the position of putlog holes might be attributed to different building teams working side by side on this monumental architecture. Plaster found in associated layers suggests that at least the inner walls were covered with white plaster (see chapter V.2).

In a way, the portico construction, with an average width of 4.40m, can be considered as the edge of a large box, which was filled and levelled to create a more or less horizontal surface for the Forum area. Especially the NE wing of the portico thus served as a terrace wall for the whole Forum area, as this was the lower part of the slope. It seems from stratigraphic observation that the Forum square area was filled and levelled with redeposited natural soil that progressively became available during the cutting of trenches and levelling of the north-western (upper slope) part of the Forum area. Once this enclosed area was sufficiently levelled, it was possible to build the temple in its central axis.

Probably at the same time as the topographic reorganization, the newly built NW wing of the cryptoporticus was filled with the same material that was used for the levelling of the Forum square around the temple (Phase II). The sediment was not deposited in a natural way by colluviation, as is clear from its heterogeneous composition. It was clearly an anthropogenic operation, carried out during the beginning of the settlement history of Roman *Ammaia* when little surface debris and refuse existed. The reason for this probable change in the original plans by the builders is still unclear, but enhancing the stability of the whole structure is certainly an option. This also allowed them to connect the simple one-level portico on the long SW side of the Forum with the real two-level cryptoporticus on the long NE side, and thereby to overcome the height difference of more than two meters. Thus, at the beginning of the effective use of the portico around the temple area, only its NE wing had a functioning cryptoporticus, the other wings (NW and SW) were used as simple portico-buildings with only one accessible level, situated not much above the square around the temple. The earlier assumption, that the whole building was of a cryptoporticus-type and that the NW wing of the portico-building was possibly filled in a post-abandonment phase as a result of a kind of catastrophic landslide (Mantas 2000), can now be dismissed.

Few new data are available for the SW wing, but we observed that the lesser wall thickness (average 0.40m, compared to 0.80m for the walls of the NW wing) and the shallow foundations provide sufficient evidence for the existence of one floor level only, situated at the same height as the surface level of the open space around the temple.

In other words, only the sturdy NE wing of the portico building was clearly constructed and used as a cryptoporticus, with two floor levels, from the start. It also looks as if the lower part of the cryptoporticus wing (NE wing) was not paved; the floor consisted of trampled clay or beaten earth. The same seems true for the Forum area around the temple itself, where (at least in square D903) no traces of pavement were encountered. This lower part of the cryptoporticus probably had a very low ceiling, even declining in height towards the south. The upper part of the NE portico probably had a floor of terracotta tiles, none of which were found *in situ*, but evidence for which abounds in the form of frequent broken pieces among the debris excavated in the room.

In the third phase, three layers could be observed in the lower levels of the portico rooms that probably did not represent discrete events but rather a slow process of accretion, cleaning, reworking etc. of the surface. Especially interesting is a thin dark organic layer (SU 2032 in P1 and SU 2048 in A803), which could indicate that the cryptoporticus was used, possibly in the mid- or late-Imperial period, as a stable or shed for animals. This third phase seems to cover the whole institutional life of the complex and extends over several centuries. Contrary to the temple complex (see above) we see no traces of major architectural interventions of Flavian date in the investigated area.

The fourth phase consists of contexts that indicate change in the use of the NE cryptoporticus, illustrated by a division of this wing into rooms by a dry stone wall and the renewing of the lower surface with a mortar floor (in square A803). We might speculate that this means the end of the use of the cryptoporticus as a public building, possibly in Late Roman times. This event is associated with part of an animal skeleton, which could be interpreted as a foundation deposit, but could also simply indicate the presence of animals at the time of previous architectural collapse, under the new pavement.

The eventual collapse of the portico building was represented by deposits of broken roof tiles and crumbled wall plaster in the fifth phase. The rubble layers were very thin and consisted of tile fragments only, which might indicate that most other building materials, such as most floor tiles and perhaps slabs of marble, were scavenged and reused. We recorded heaps of broken tiles and wall plaster (SU 2014 in P1) and secondary refuse of tiles (SU 2039 in A803), which might prove that some areas were cleaned for other post-Roman (?) activities, while some parts of the cryptoporticus were used as a refuse area. This event or process is contemporaneous with the major robbing for reusable material outside the portico and with the destruction of the road surface of the *cardo maximus*, as recorded in P1. During this phase, most of the worked stone was robbed and reused elsewhere.

Large-scale scavenging and robbing opened the way for colluviation processes in the sixth phase, probably of Medieval and later date. There is evidence for several episodes of colluviation that spilled over the broken and breached walls. The prerequisite for colluviation is open and vegetation-poor surface upslope, meaning that colluvial deposits encountered in the Forum area indicate the use of the *Ammaia* town area for agriculture and thus also involved further clearance of wall rubble on the surface.

The last phase is associated with the modern use of this area. Some intriguing deposits in convex-shaped cuts in P1 (SU 2020 cut, SU 2019 fill) belong to this phase. These pits are, it seems, evidence of non-archaeological digging activities in the general area of the Forum.

D.T., F.V.

I.3 THE SYSTEMATIC SURVEY (2008–2010)

Frank Vermeulen

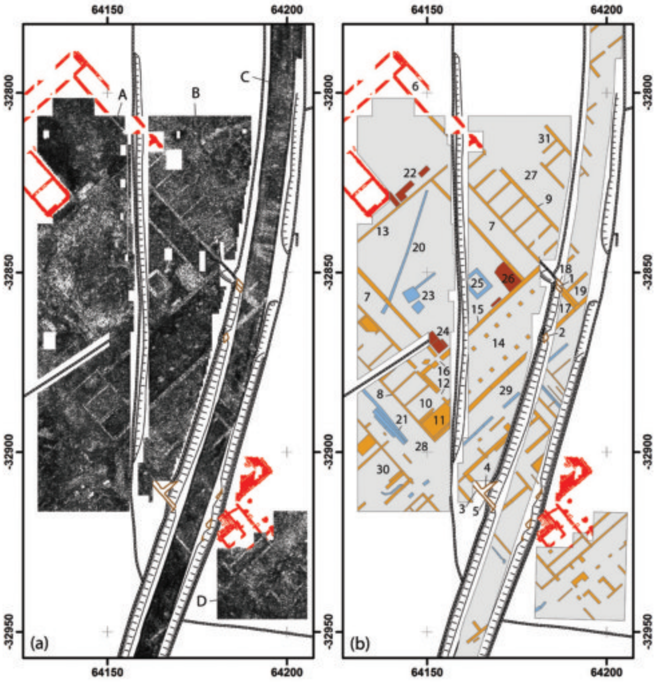

Fig. 38 *Ammaia*. Results and their interpretation from ground penetrating radar survey in the Forum and Baths area, combined with the excavated structures (red) (after Verdonck and Taelman 2012).

Between 2001 and 2006, simultaneous with on-going excavations in other sectors of *Ammaia*, a small team of researchers from the universities of Ghent and Cassino undertook a geoarchaeological and topographic survey of the ancient city and its territory. This has allowed a better understanding of the size, position and general landscape setting of the Roman town (Vermeulen *et al.* 2005; Deprez, De Dapper and De Jaeger 2006; Deprez *et al.* 2009; Corsi and Vermeulen 2008, 2009 and 2012a). But, as we saw (introduction, p. 8), it was only when F. Vermeulen and C. Corsi, on behalf of the University of Évora, were active as fieldwork coordinators on the site, that attention was again drawn towards the Forum area. In collaboration with Ghent University and supported by the EC-funded project Radio-Past and by the FCT (Portuguese National Fund for Research) project "Ammaia", a large-scale geophysical survey was carried out over the whole town area, including certain extra-mural zones (see Fig. 7). Detailed information on the results of this multidisciplinary work can be found in the book *Ammaia I*. However, we can reiterate that in the Forum area, the survey was most intensive and successful. Three geophysical methods were applied here in full coverage: ground-penetrating radar (GPR) (Fig. 38), gradiometry and electrical resistance, thus creating a sound basis for intensive data fusion and high-quality interpretations.

Firstly, with campaigns between 2008 and 2009, it was possible to obtain almost complete coverage of the Forum with GPR. Field data were initially acquired with a hand-pulled Sensors & Software pulse EKKO PRO instrument, with one 500 MHz antenna, but duplication of sensors and the introduction of a quad bike for traction allowed higher efficiency and speed. Secondly, quasi-full coverage of the area was also achieved by the end of 2010 with magnetic survey and electrical resistance survey, both of which proved very successful. For the geomagnetic survey, a Geoscan Research FM256 Fluxgate Gradiometer was used in combination with a Bartington Instruments Grad601-2 Dual Sensor Fluxgate Gradiometer.

The electrical resistance survey over the whole Forum area was done zig-zag with a multiplexed GeoScan RM15, using a PA20 multi-probe array. All measurements were taken every 0.5m along 1m traverses using marked lines and measuring tapes. Finally, the program of geophysical prospections in this area was completed in the summer of 2011 by a GPR survey of the road that crosses the eastern corner of the Forum site. Using this approach some more damaged, but not fully destroyed, structures lying buried under road asphalt could be added to the general plan.

The crucial new data on all underground structures, obtained by way of these geophysical surveys were further enhanced by a terrestrial laser scanning operation on the above-ground preserved temple remains. Furthermore, a high-resolution topographic survey of the whole terrain, using a DGPS instrument, allowed precise mapping and 3D corrections (Corsi, Johnson and Vermeulen 2012; Corsi and Vermeulen 2012a: 69–74, 91–103, 146–148; Vermeulen, Corsi and De Dapper 2012).

The varying nature of the deposits across the Forum site provided good contrast in the signatures of the different geophysical readings, indicating the presence of standing and crumbled walls, preserved wall foundations, porticoes with column bases, open spaces, floors and fill deposits. The combined results of all operations showed the full layout and regular configuration of the Roman Forum, delimited its main architectural spaces and identified the size and dimensions of its constituent elements. Instead of the simple rectangular plan proposed by V. Mantas (2000), the new field-

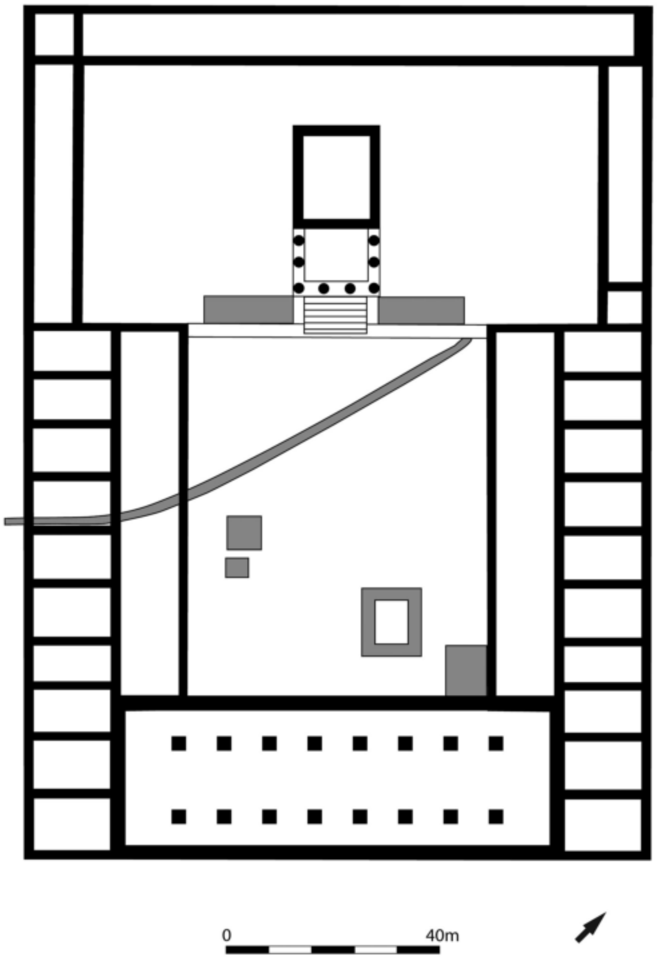

Fig. 39 Mapping of the Forum of *Ammaia* based on all present evidence. In black are the walls, in grey other constructions connected with water (aqueduct, basins) and other possible monuments on the square (elaboration J. Angenon).

work revealed a more complex plan with slightly different measurements and a very well articulated tripartite configuration, measuring 88m long and 65m wide (Fig. 39). The portico surrounding the north-western part, around the centrally and axially placed temple, was confirmed by the geophysics results, but the central part of the square of the Forum was now identified as a less wide, more enclosed square, flanked by two rows of *tabernae* with inner dimensions of *c*. 9 by 5m. Each row contained seven shops, or probably only six if one of them is interpreted as a corridor giving access to the Forum square from its long side (see above: square A605). Both rows of *tabernae* open onto a fronting corridor directed towards the *c*. 31.5m-wide central square. We may assume that this corridor was colonnaded, even if the geophysical survey results show only a continuous supporting wall (or foundation) on which columns would have been positioned. The width of this corridor or porticoes is approximately 5.75m (between the walls), and therefore somewhat wider than the portico surrounding the temple (*c*. 4.3m). The GPR results suggest that a narrow transverse structure, possibly a low wall, separated the north-western and central parts of the Forum, even if the other methods do not show this evidence so clearly.

The south-eastern part of the Forum, opposite the temple area, was taken in by a basilica of almost 46 by 17m, flanked on both short sides by three rectangular rooms, possibly for administrative functions. Although those on the eastern side of the building are in part destroyed by the construction of the modern road from Marvão to Portalegre, the most recent GPR results from the area underlying the modern road (Verdonck and Taelman 2012) leave no doubt about their plan, which therefore responds perfectly to the principle of symmetry. Possibly only the more important central room of each trio was directly accessible from the basilica. The basilica, with its impressive 1.2m-thick walls or foundations, was characterized by a clearly distinguishable double row of eight internal roof-supporting columns (or pillars), spaced approximately every 4m and creating three aisles, with a broader central nave almost 8m wide. Some depth-slices obtained from the GPR survey suggest a major entrance from the Forum square in the centre of its northern side.

An interesting detail provided by the combined geophysical survey results, is that remains of several smaller monuments and functional structures were observed in the open central area of the Forum. Some possibly relate to water supply and drainage (aqueduct, sewers, cistern, fountains?), while others probably represent bases and foundations for small public monuments or statues. Very distinct are two larger rectangular structures near the south-eastern corner of the square and a possible aqueduct which crosses the square diagonally, linking the town's water distribution system under a main *cardo* SW of the Forum with a structure (fountain?) between the temple steps and the northern angle of the central square.

I.4 COMPARATIVE RESEARCH, INTERPRETATION AND VOLUMETRIC RECONSTRUCTION

Cristina Corsi

The Forum of *Ammaia* has many features that are common to the grand scheme of Roman architectural models well known in all regions of the Empire and, therefore, its interpretation and three-dimensional reconstruction need to rely on comparative examples from a wider area. Certain elements are heavily influenced by regional or provincial models, while others take their inspiration more directly from Rome and especially from northern Italy whence the scheme of closed tripartite fora was essentially 'exported' to the western provinces (Ward-Perkins 1970; Grassigli 1994; Cavalieri 2002).

The presence of hydraulic elements (water tanks, cisterns, fountains, basins, ponds, etc.) connected with the temple area and perfectly integrated into the sacred complex is a feature that many fora of *Lusitania* have in common (e.g. *Ebora*[1], *Civitas Igaeditanorum*[2], *Conimbriga*[3], *Augusta Emerita*[4], *Pax Iulia*[5], *Aeminium*[6], *Eburobritium*[7]) and share with several monumental centres of the *Hispaniae* (e.g. *Ampurias*[8], *Astigi*[9], *Baelo Claudia*[10], *Bilbilis*[11], *Clunia*[12], *Valeria*[13], *Termes*[14] and *Carteia*[15]). In some cases, this characteristic has been related to the fact that huge quantities of rainwater could have been collected via the watershed systems of the long porticoes. At the same time the high frequentation of the market place would have been facilitated by the availability of drinkable water in public fountains, and water was also necessary to perform certain sacred religious rituals (Reis 2010: 286-287). Still, a recent review of this type of installations in the Lusitanian fora showed a sort of recurring relationship with the rituals of the imperial cult (Reis 2010).

In *Ammaia*, the presence of still-buried structures related to the water provisioning or drainage system just in front of the temple, as can be seen in the geophysical survey (and mainly GPR) interpretation (see Fig. 38), can undoubtedly be brought in relation with the presence of the draining floor excavated in Trench 1, on the right side of the eastern forepart of the temple. On the basis of the above-mentioned comparative models, we propose to locate here a rectangular water basin, that could easily have been duplicated on the opposite side of the steps to the temple. The basin could have been built in masonry; in which case, the wall SU 1044 found in front of the esplanade of the temple should be interpreted as its foundation[16]. This (these) basin(s) would have abutted the forepart, and would have been aligned with their terminal part and with the first of the steps. As we will see soon, this kind of architectural solution was probably that adopted in *Pax Iulia* (Beja) (*infra*).

Furthermore, our digital reconstruction of the Forum temple[17] of *Ammaia* itself is also based on a combination of excavations, geophysical survey and comparative research. Among similar monuments, that in the Lusitanian town of *Conimbriga* has been considered as the closest example. The temple of *Conimbriga* (Flavian phase) measured 19 by 11.80m; it was probably tetrastyle and pseudo-dipteral. The *pronaos* had a depth of 4.5m and a width of 7.50m, while the *cella* measured 8.70 by 7.50m (Mierse 1999: 219). On either side of the central steps, instead of elongated foreparts, there were two almost-square platforms.

The columns used in the reconstruction of the temple of *Ammaia* were projected at an idealistic 30 Roman feet (9 meters) in height, reaching thus the perfect proportion for a *tetrastylos* temple, and resulting in a 1:2 ratio for its ground-plan/elevation. It is not known which type of columns were used for this monument; they could have been either Ionic or Corinthian. Therefore, two versions of the temple reconstruction were made, one for each of these orders (Fig. 40).

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[1] Hauschild 2010: 28; Reis 2010: 290.

[2] Carvalho 2009; Mantas 2010.

[3] Alarção and Etienne 1977; Mierse 1999: 85, 97-97, 219.

[4] Mateos Cruz and Palma García 2004; Nogales Basarrate and Álvarez Martínez 2010.

[5] Alarcão 1990: 49; Hauschild 2002; Lopes 2010.

[6] Nogales Basarrate and Álvarez Martínez 2010. The installation of Coimbra is a real *lacus*.

[7] Reis 2010: 299.

[8] Aquiluè 2004: 38-39.

[9] García-Dils 2009: 110-111; García-Dils 2012: 741.

[10] Ponsich 1974: 27-28, Fear 1996: 174, Mierse 1999: 187.

[11] Martín Bueno and Sáenz Preciado 2005; Martín Bueno and Ramírez de Arellano 2008.

[12] Palol and Guitart 2000: 159-160.

[13] Reis 2010: 303-304.

[14] Martínez Caballero 2007: 277-279.

[15] Roldán Hervás *et al.* 1998: 125; Roldán Hervás *et al.* 2006: .174, 397.

[16] In our interpretation, the construction of this basin would have obliterated the rectangular base SU 1013, that would represent an earlier phase of the construction of the square.

[17] As stated above, the temple of *Ammaia* measures 17.50 by 8.90m.

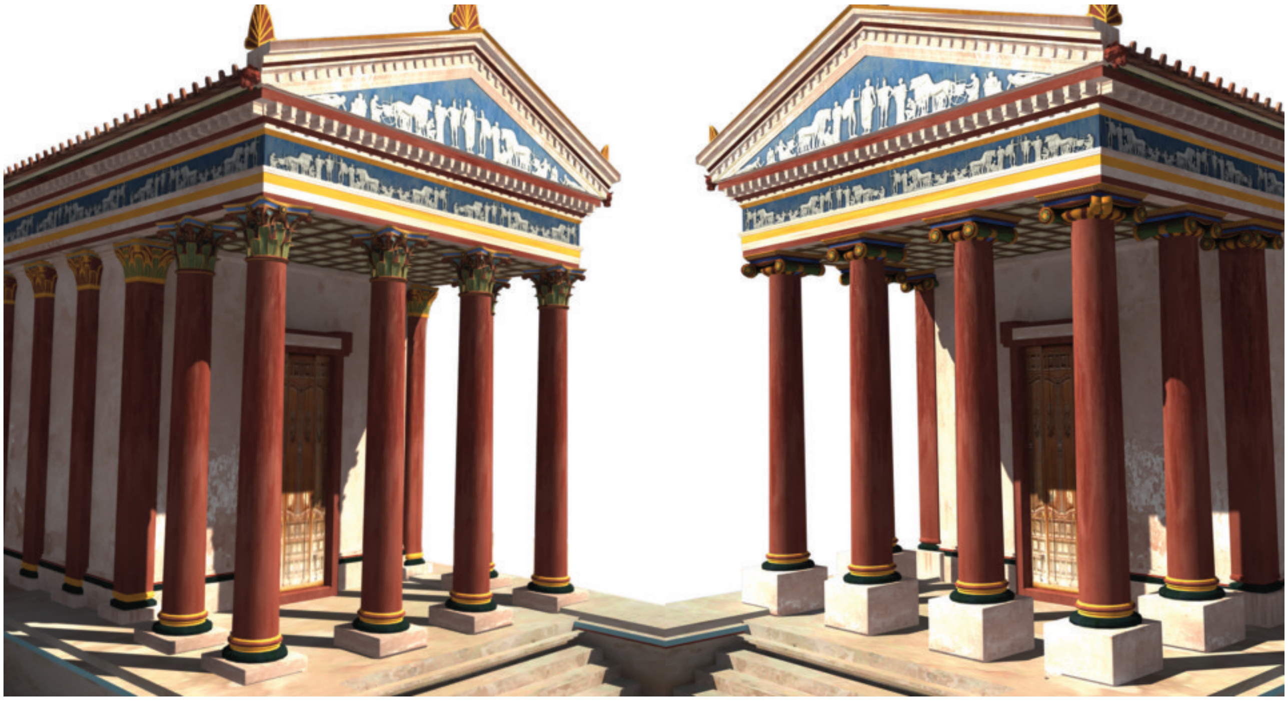

Fig. 40 *Ammaia*, Forum. Two versions of the 3D visualisation of the temple with Corinthian/Ionic order (elaboration M. Klein, 7Reasons).

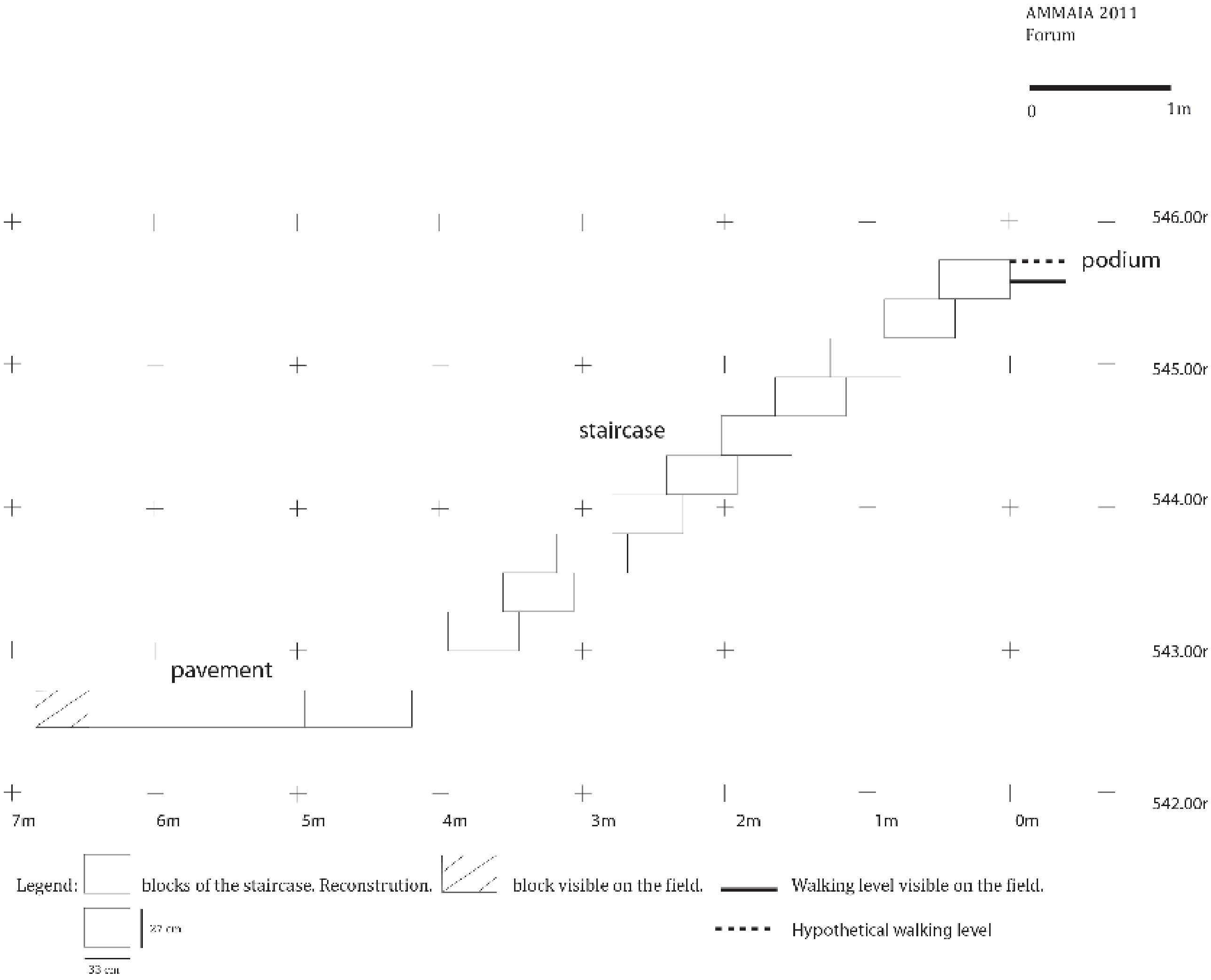
AMMAIA 2011
Forum
0
1m
546.00r
podium
545.00r
staircase
544.00r
543.00r
pavement
542.00r
7m
6m
5m
4m
3m
2m
1m
0m
Legend:
blocks of the staircase. Reconstrution.
block visible on the field.
Walking level visible on the field.
27 cm
33 cm
Hypothetical walking level

Fig. 41 *Ammaia*, Forum. Hypothetical reconstruction of the monumental stairway of the temple (elaboration S. Persichini).

Calculating the distance between the front wall of the podium and the structure that has been interpreted here as a substructure of the concrete core, on which the steps of the temple were placed, Sara Persichini reconstructed a flight of 11 steps needed to reach the level of the surface of the podium (Fig. 41).

In this same temple area, the most intriguing question is connected with the presence of an anomaly, seen in the geophysical survey results and interpreted as a long wall connecting the NE wing of the portico with the opposite side, running less than 3m SE from the podium. Ground-truthing has shown that few segments of this wall actually exist, and so they cannot be interpreted as the front wall of a raised platform that would have supported the full sacred area of the Forum. Instead, the walls SU 1044 and 1014 have to be considered as foundations/containing walls: the former of monuments that flanked the foreparts (we suggested a water basin), the latter of the core of the steps. Most important is that the presence of granite blocks or of imprints on the preparatory layers for paving with large blocks, found in the SE and SW corners of Trench 1, proves that the surface level of the central square was not lower than that of the area surrounding the temple.

The idea that the northern part of the Forum complex was elevated on a platform was initially adopted on the basis of the suggestive comparison with the reconstruction of the Flavian forum of *Conimbriga*. This forum looks very similar to that of *Ammaia* as regards the dimensions, the tripartition and the general spatial organization (Persichini 2012: 458-459). The Flavian phase at *Conimbriga* represents an almost-complete rebuilding of the Augustan monumental complex, maintaining only the axial perspective, the size of the large central space and the positioning of the temple on platform raised above the level of the surrounding area through a quadrangular terrace, measuring approximately 30 by 30m. This terrace had small flights of steps that allowed access to the lower area of the square (Mierse 1999: 219). Another example for the raising of the sacral sector of the forum on a (high) terraced platform is the forum of *Eburobrittium* (Óbidos), which also offers comparative elements for the dimension of the temple and the NE side with *tabernae* opened on a portico, while the opposite long side seems to have been occupied by a rectangular building (a basilica) divided in three aisles by two rows of nine columns each (Moreira 2002).

In the light of our excavations, however, the research on comparative models for this core part of the complex has focused on the sacral part of the forum of *Pax Iulia* (modern Beja), the most prominent remainder of its tripartite forum (Viana 1942; Viana 1947). Its temple, with N–S orientation, was larger than that of *Ammaia*, measuring 29 by 16.50m (Alarcão 1990: 48)[18], but had similar front steps flanked by two foreparts. It was surrounded on three sides by a water basin, built in *opus caementicium* with flooring in "*cocciopesto*" (Lopes 2010: 193–194). In the case of Beja, the "*temenos*" sector was at the same level of the central square. On the basis of our excavations, this is the reconstruction proposed here for *Ammaia* (Fig. 42).

When referring to the portico surrounding the central square, only extensively investigated for a portion of its NE wing in *Ammaia* (*supra*), but known in its main planimetric characteristics for most of its extension on three sides, the numbers of comparative examples increases substantially, as porticoes surrounding at least the sacral part of tripartite fora are known in many Hispanic Roman towns. Indeed, the *Ammaia* example could be classified among these so called π-shaped types, as only the segment on the bottom short sides and the two lateral wings delimitating the temple area can be reconstructed as simple porticoes open with columns on the inner precinct (see Fig. 39). In fact, the two sides that bordered the open square in the central part of the *Ammaia* complex have been reconstructed through our interpretation in a 3D model as porticoes in front of rows of *tabernae*. These latter would have had only one level (the same as the square) on the western side, while on the opposite side, on the basis of the geomagnetic survey (Corsi, Johnson and Vermeulen 2012), and taking into account the great difference in levels, we hypothesized that at least those at the SE corner could have been on two levels, the lower accessible only from the *cardo* (Fig. 43).

In this case, we could refer to the later phase of the forum of *Conimbriga* as best comparative model for the part of the portico and cryptoporticus that has been excavated. In fact, in *Conimbriga* most elements of the cryptoporticus built in the Augustan period were incorporated in the Flavian complex, becoming the substructure of an open *porticus*, which served as the backdrop of the temple. The cryptoporticus was a non-accessible space; likely, it served mainly to raise and level the floor of the square and to support the portico that surrounded the temple. *Aeminium* (modern Coimbra), on the other hand, where the difficulties arising from the topographic setting (with the forum placed on the highest area of the town) implied the construction of a cryptoporticus on two levels (Alarcão *et al*. 2009; Nogales Basarrate and Álvarez Martínez 2010), can be compared to the SE corner of the Forum of *Ammaia*. Furthermore, if we limit our analysis to the two-dimensional aspect of the plan itself, the forum of *Aeminium*, which was smaller than that of *Ammaia* (63 by 36.09m), was placed at the crossroads of the two

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[18] On the basis of these dimensions and on the discovery of some Corinthian capitals, Hauschild suggested to consider it hexastyle prostyle (Hauschild 2002: 219), while Alarcão (1990: 49) proposed a reconstruction as a pseudo-peripteral building.

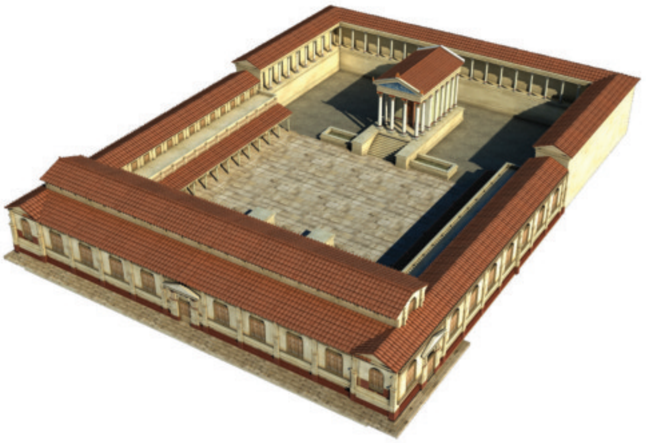

Fig. 42 *Ammaia*. Hypothetical 3D reconstruction of the Forum square (elaboration M. Klein, 7Reasons).

main urban axes, with the *cardo maximus* running, as in *Ammaia*, along its eastern long side.

The third component of the tripartite Forum of *Ammaia* consists of the basilica, a rectangular space, divided into three aisles by two rows of eight columns or pillars[19]. Our building, with its dimensions of *c.* 46 by 17m, is almost twice the size of the basilica of *Aeminium* (7.99m or 27 *pedes* by 23.36m or 79 *pedes*; divided into three aisles by two rows of six columns), and is still larger than that of *Conimbrig*a (33 by 13.65m, also divided in three aisles by two rows of six pillars each: Alarcão and Etienne 1977), while it is slightly smaller than that of *Sellium* (18.20 by 54.60m; Ponte 2010: 327). The latter differs from the basilica of *Ammaia* because it does not contain any adjacent rooms, and therefore its longitudinal dimension is equal to the short side of the forum, while in *Ammaia* we identified the presence of three rooms on the western side and, most likely, three rooms on the opposite side also, where the GPR survey has detected the presence of segments of walls under the modern road (chapter I.3). The presence of rooms or halls connected with the basilica is a recurrent phenomenon in early imperial fora, as in *Conimbriga* and *Aeminium*. These spaces are usually associated with some administrative or political use, or related to the imperial cult. In *Aeminium*, for instance, the apsidal room which was axially placed on one of the long sides of the basilica is thought to have functioned as *Aedes Augusti*.

In conclusion, our reconstruction of the whole volumetric aspect of *Ammaia*'s Forum considers the main aspects of the plan detected with the geophysical survey as relating to a single synchronic phase, excluding the possibility that substantial changes took place during the life of the monumental complex. It is obvious that during its lifespan some minor transformations and remodelling or additions must have been undertaken, such as the several elements interpreted as bases and platforms for honorary monuments scattered in the central square. But the 3D vision of the buried elements, offered by the interpretation of the GPR survey time-slices (Verdonck and Taelman 2012), seems, in combination with the excavated evidence, to support an argument for a general coherence of foundation and elevation levels, and thus for a unified monumental complex. Nevertheless, the general interpretation of the chronological sequence in the major building features proposed here identifies two main construction phases, relatively close to each other chronologically. The building of the Forum complex would date to the Claudian period, at the earliest, even if the planning for its allocated space within the city grid probably dates to the reign of Augustus. It is evident that some consistent changes had already been achieved in the second half of the first century AD, most likely in the Flavian period. Except for this remodelling, which occurred in particular near the Forum temple, almost no interventions have been detected in the course of the excavations. We have to underline, however, that the stratigraphic record is far from complete and that the available quantity and quality of diagnostic materials for dating is very poor so far. This phasing proposal finds many comparisons in the forum complexes of *Hispania*, such as at *Baelo Claudia* (Fincker 1994), *Clunia* and *Emporiae* (Mar and Ruiz de Arbulo 1987), and in *Lusitania,* such as in *Conimbriga* (with an earlier Augustan phase and a remodelling during the Flavian times (Alarção 2004: 266) and of course *Augusta Emerita* (Ayerbe Vélez, Barrientos Vera and Palma García 2009: 807-809).

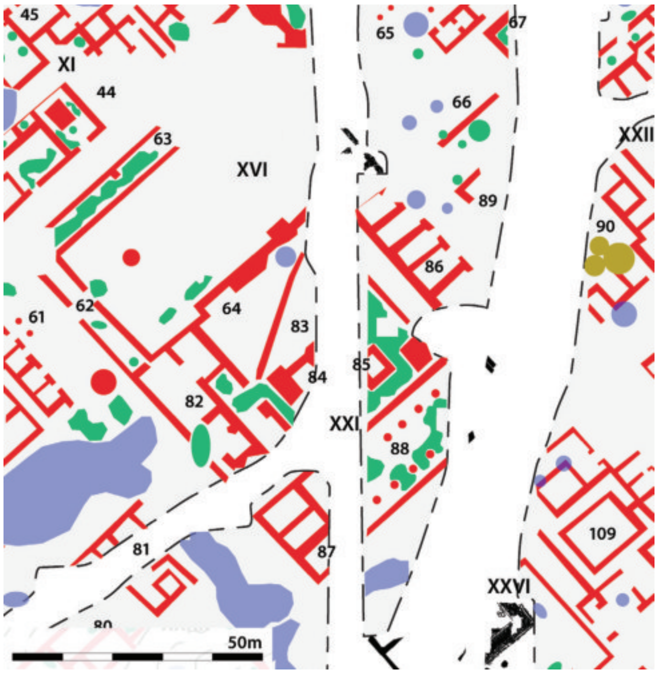

Fig. 43 *Ammaia*, Forum. Vectorised interpretative plan based on the geomagnetic survey data, where it is visible that the *tabernae* of the SE side of the Forum platform are open on the so-called *cardo* (elaboration P.S. Johnson).

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[19] The basilica of the forum of *Baelo Claudia* contains the same number of columns dividing the hall in three aisles: Fear 1996: 174.

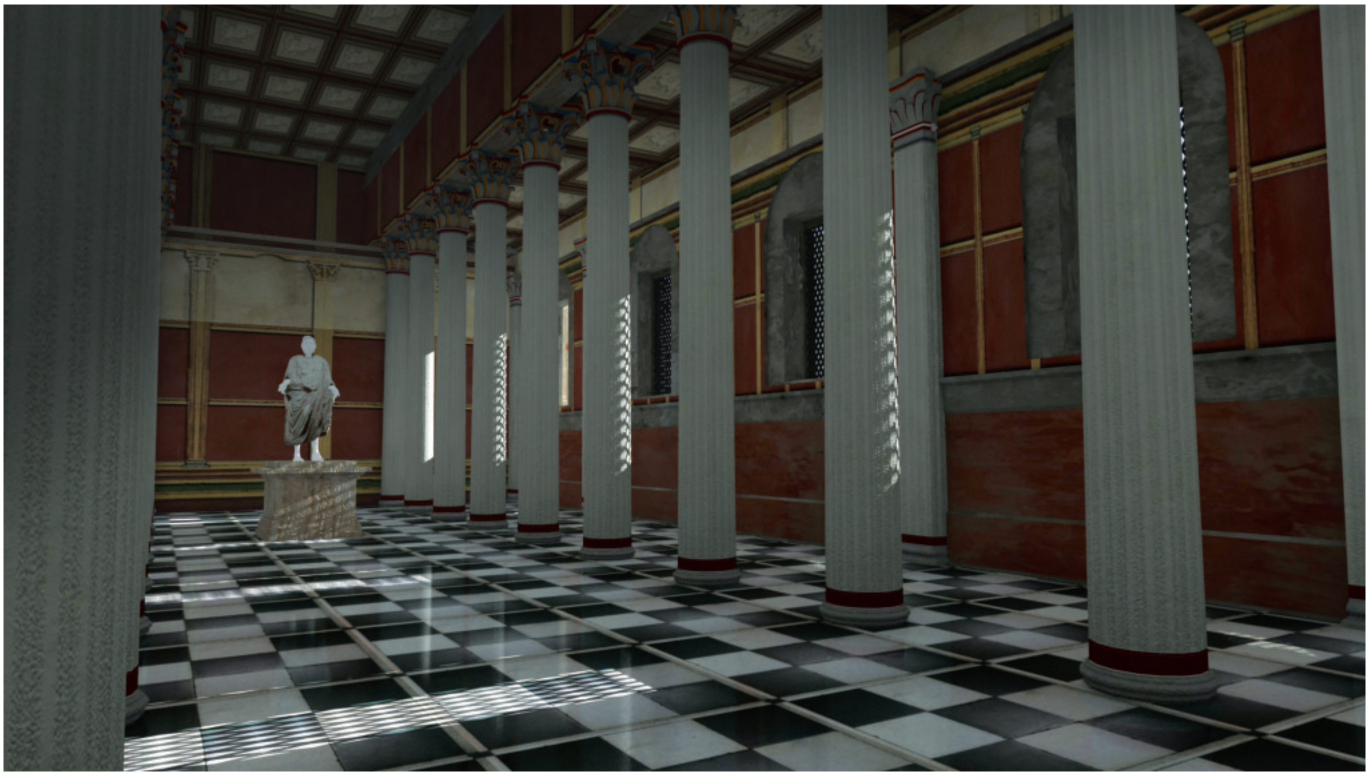

Fig. 44 *Ammaia*, Forum. Hypothetical 3D reconstruction of the inside of the basilica (elaboration M. Klein, 7Reasons).

As stated above, the Forum complex of *Ammaia* can be classified as a typical "tripartite" forum, meaning that the central square was bordered by a portico, and that the "sacred" area with the temple occupied one of the sides, with the basilica located opposite. Therefore, in *Ammaia* we are confronted with a complex that would have offered all the typical major functions of such a forum type: the sacred, the commercial and the political-administrative. This consideration leads us to point out a significant difference with the forum of *Conimbriga*, which we have identified as one of the most "inspiring" models. During the radical transformations of the Augustan forum, achieved under the Flavii, the *tabernae* and the basilica (*supra*) were destroyed here and replaced by a *porticus* (Alarção and Etienne 1977; Mierse 1999: 85, 97–97).

The whole proposed reconstruction of the *Ammaiensis* complex has been modulated on the basis of technical observations and on comparative research. The forum of *Sellium* (Tomar), for instance, is only slightly smaller (width: almost 55m, estimated length: 85.30m) and the position and proportion of the basilica and surrounding structures (some rooms on its western side and the portico) seem highly comparable (Ponte 1989b: 100; Ponte 2010: 325–326). We took into account the estimation for the height of this basilica (ranging between 11.21 and 11.87m; Ponte 1989a: 12; Ponte 2010: 327) to reconstruct the ideal height of the basilica of *Ammaia* (Fig. 44). Some uncertainties, however, remain. Indeed we have no secure elements to determine where the gates to the central square were located. Considering the elevation constraints, we proposed to locate the main entrances at the junction of the sacral sector and the central square, i.e. where the portico surrounding the temple area ends and the rows of *tabernae* with front porticoes begin. Another (side) entrance could have been situated at the NE corner of the complex: the "containing" wall SU 2044 placed in a later phase to abut the perimeter wall of the portico could be considered as the concrete core for steps that would have connected the crossroads between the *cardo* and the *decumanus* with the interior of the monument.

Only focused excavations, preferably on a larger scale, could further elucidate these and other uncertainties about the building's architectural details.

I.5 THE WALL STRUCTURES

Vincenzo E.J. Macchione

SU: 2016; Year: 2011; Sector: A/D; Location: s. D1101
Figs. 45, 236a

The sample presents masonry with wall texture with irregular boulders and use of wall fillings. The elements is oblique toward the valley (functional system to the stability). The wall is composed only of stones, mainly granite, with presence of wall fillings. The main element is the abundance of mortar used as a binder in some areas, also reaching 0.07m.

Measuring two courses one will note the repeated use of a module of 0.37m. Notes: The samples SUs 2016 and 2015 in the Forum area and the sample SU 8 in the Baths area are categorised as Type I.

Binder: the sample presents a large use of elements with a lot of mortar which reaches out to the 0.07m thickness. Stone material: granite; dimensions: max: 0.29-0.30 (H) by 0.47m (W); med.: 0.16 (H) by 0.32m (W); 0.13 (H) by 0.25m (W); min.: 0.13 (H) by 0.175m (W)

Type: I, characterised by a building technique with suspending irregularly shaped boulders and with wall fillings; the inner core consists of blocks of wedged in stone.

SU: 2015; Year: 2011; Sector: A/D; Location: s. D1101
Figs. 45, 236a.

The sample presents masonry with wall texture with irregular boulders and use of wall fillings. Dominant feature is the uniformity of all calcareous stones and split with no signs of finishing. There are large elements with exposed smoothed face. The wall filling is displayed obliquely likely to compensate the difference in height between the two extremities of the wall (*c.* 0.12m). Notes: The samples SUs 2016 and 2015 in the Forum area and the sample SU 8 in the Baths area are categorised as Type I.

Binder: the sample presents an abundant use of mortar. Stone material: granite; dimensions: max. 0.269 (H) by 0.33m (W); med.: 0.19 (H) by 0.27m (W); min.: 0.102 (H) by 0.17m (W).

Type: I, characterised by a building technique with suspending boulders irregularly shaped and with wall fillings.

SU: 2015b; Year: 2011; Sector: A/D; Location: s. A901
Fig. 45, 236b

The sample presents masonry with wall texture in irregular drafts and use of wall fillings. There is a use of large elements. The wall filling seems to be more linear than samples SUs 2016 and 2015 and is formed by small parts or splinters. The potlog hole (0.16 by 0.25m) is smaller than the other two on the same wall. It is obvious that a manding of the wall is present, In fact, the masonry technique is characterised by wall fillings very different from the rest and of smaller size, as can be seen from the dimension of the scaffolding post inserted in the courses (min. 0.025m – max. 0.05m in the presence of binder). Notes: classified as Type Ia are also the samples SU 15 and 44 and SU 87 in the Baths area.

Binder: the sample presents use of abundant mortar. Stone material: granite; dimensions: max.: 0.26 (H) by 0.28m (W); 0.23 (H) by 0.35m (W); 0.21 (H) by 0.31m (W); med.: 0.16 (H) by 0.23m (W); 0.13 (H) by 0.25m (W); min.: 0.0875 (H) by 0.13m (W); 0.0899 (H) by 0.17m (W).

Type: IA, characterised by an average building technique with irregular outline facing of medium size and wall fillings. The inner core is characterised by irregular blocks. A technique, therefore, originally similar to Type I, but which presents different elements that make a complex visual effect characterised by a greater regularity.

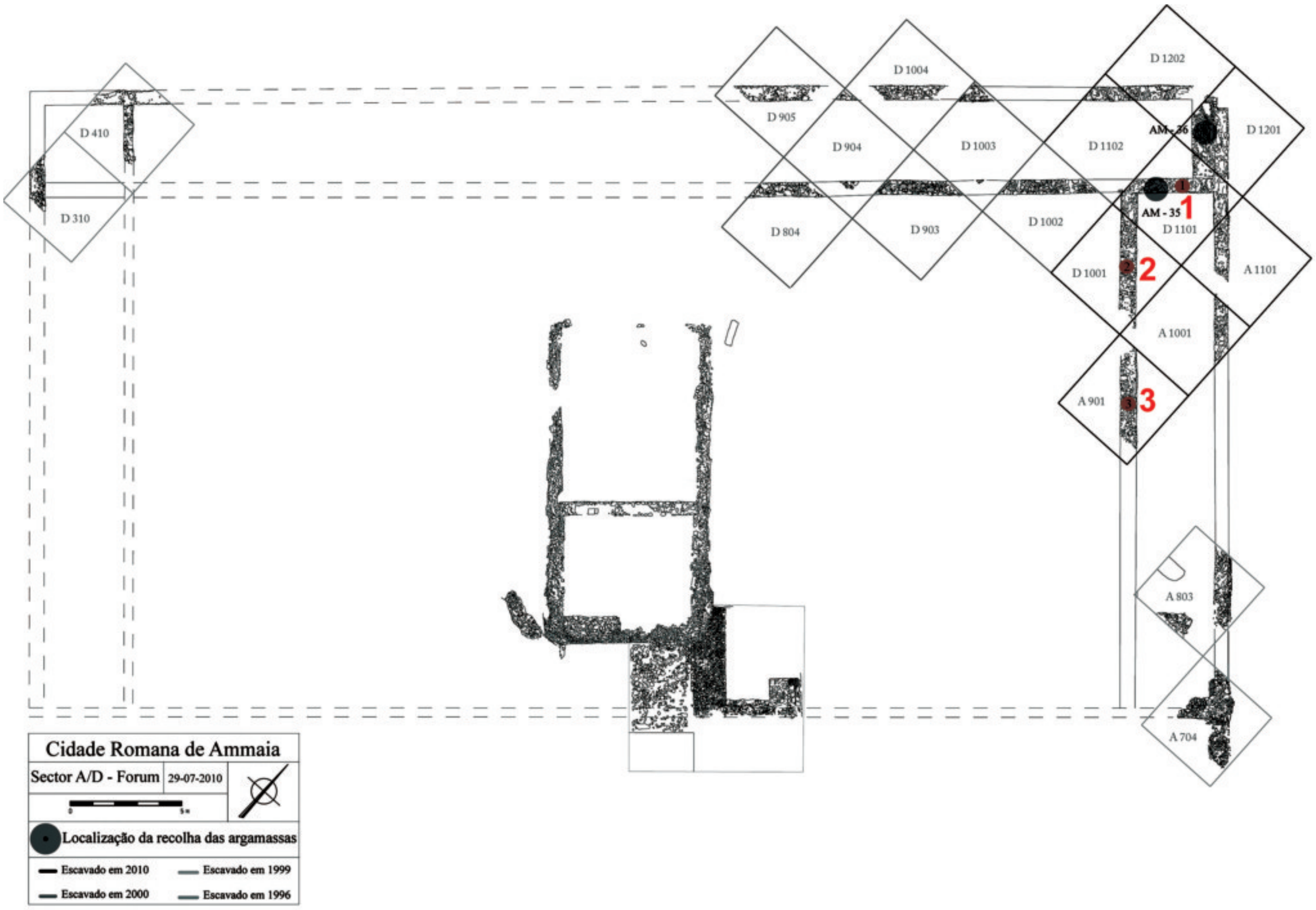

Fig. 45 *Ammaia*, Forum. Plan with location of samples (1 = SU 2016; 2 = SU 2015; 3 = SU 2015b).

I.6 THE FINE WARES

José Carlos Quaresma

The data are presented here according to the following order: progressive number, inventory number, year of excavation, provenience, dimensions, class, production, shape, description, chronology, references. Description of fabric groups is given in chapter V.3. Measurements are given in millimetres.

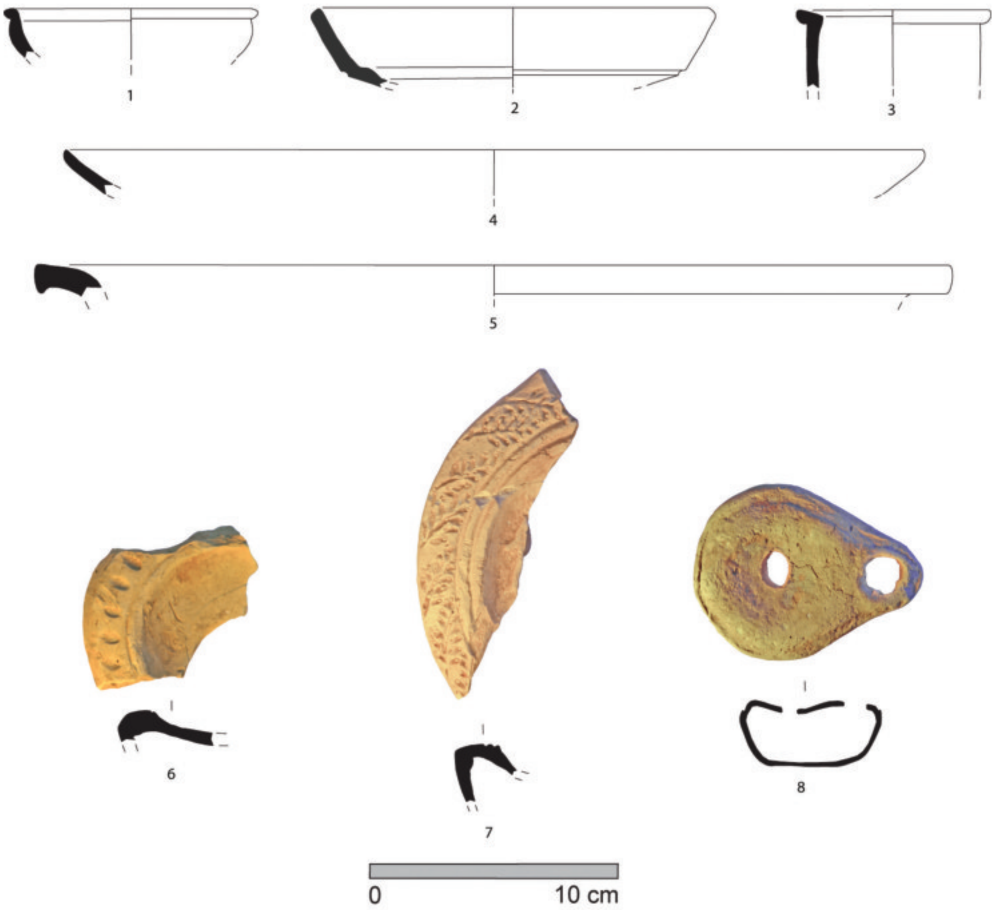

Fig. 46 *Ammaia*, Forum. Drawings and pictures of the selected fine wares. Nos. 1-5: *Terra Sigillata*, nos. 6-8: lamps.

Abbreviations
Drag. = Dragendorff 1895
s. = square

1 – Inv. no. 7138 (Fig. 46, no 1)
Year 1996. S. 1101.1. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Measurements: diam. 132, thickness 5, length 18. Rim fragment. Curved, thick wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 570-578.

2 – Without Inv. no. (AM_DR_340_Q803) (Fig. 46, no 2)
Year 1999. S. 803. Measurements: diam. 162, thickness: 5, length: 39. *Terra Sigillata*. Production: Hispanic-Andújar. Shape: Drag. 15/17. Rim fragment. Oblique, straight wall. Outer groove and inner moulding at the carina. Chronology: AD 70-200. Reference: Mayet 1984: 45.

3 – Without Inv. no. (AM_DR_344_Q1101) (Fig. 46, no 3)
Year 2010. S. 1101. *Terra Sigillata*. Production: Luisante. Shape: Form 74. Measurements: diam. 75, thickness 4, length: 30. Rim fragment. Vertical, slightly curved wall. Extroverted rim, plain on the top. Chronology: AD 160-400. Reference: Raynaud 1993: 509.

4 – Without Inv. no. (AM_DR_341_Q1201) (Fig. 46, no 4)
Year 1997. S. 1201, "above the roof's destruction layer with *imbrex* and *tegula*". *Terra Sigillata*. Production: African C. Shape: Hayes 50A/B. Measurements: diam. 34, thickness 3, length 36. Rim fragment. Oblique wall. Bevelled rim. Chronology: AD 240-400. Reference: Hayes 1972: 73.

5 – Without Inv. no. (AM_DR_342_Q803) (Fig. 46, no 5)
Year 1999. S. 803. *Terra Sigillata*. Production: African D1. Shape: Hayes 67B. Measurements: diam. 360, thickness 9, length 25. Rim fragment. Curved, hanging rim with hanging lip. Chronology: AD 390-420. Reference: Hayes 1972: 112.

6 – Without Inv. no. (Fig. 46, no 6)
Year 1997. S. 1101A. Measurements: thickness: 2,5-7, length: 45. Lamp. Production: *Baetica*, coastline. Dressel 16 / Deneauve 5D. Shoulder and discus fragment. Curved shoulder. Groove between the discus and the shoulder. Small ovules (depression) on the shoulder. Chronology: AD 70-150. Reference: Bussière 2000: 22.

7 – Inv. no. AM-99-1 (Fig. 46, no 7)
Year 1999. S. 803. Measurements: thickness 2-4, length 89. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dressel 28. Shoulder, wall and discus fragment. Horizontal shoulder. Two grooves between the discus and the shoulder[1]. Decoration: Palm-leaf (excision) repeated on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30.

8 - Without Inv. no. (Fig. 46, no 8)
Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Discus-derived. Measurements: diam. discus: 40, thickness 2, height 25, width 40, length 55. Complete lamp. Small lamp with large discus and incipient curved shoulder[2]. A groove between it and the wall. Central filling-hole. Round, simple nozzle. Over-moulding. Chronology: AD 150-450. Reference: Bussière 2000: 30.

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[1] This fragment presents a large shoulder (18mm) and an impressed decoration, which has been realised by a tool and not by the lamp mould. This motif consists in palm leafs with an oblique position and placed in irregular distances, due to the use of the mentioned tool by the potter after the moulding of the lamp's body. This motif (palm leaf) is very well known in *Augusta Emerita*, but the published lamps never belong to type Dressel 28 nor this motif is placed on the shoulder. These palm leafs are usually impressed on the surface of the bottom in several types, as Deneauve 8, and they are strongly connected to the local potter GES (Rodríguez Martín 2002: 163, fig. 27).

[2] The nozzle is round, the filling-hole is central and a very well moulded groove divides the pseudo-shoulder from the reservoir's wall. It is possible that this lamp was covered by a red slip. D. Bailey (1988: nos. Q1562 and 1563) describes some miniature-sized discus-lamps (Loeschcke 5), dated until the mid second century, but they belong to the discus-type, whereas ours has been classified as discus-derived type, due to the height of the wall in relation to the width of the discus.

I.7 THE AMPHORAE

Caterina P. Venditti

The data are presented here according to the following order: inventory number, object, provenience, dimensions, description, production, contents, fabric colour, fabric description, date-range, references.

The inventory number is composed on the basis of the: location (AMM), year (0000), sector (A/D), square (0000), internal progressive number. For the encoding of colours, we refer to Munsell 1994. Dimensions are given in centimetres.

Excavations 1996

AMM1996A1101.7. Base
Provenience: s. 1101. Diameter base 5; max height 6.1; wall thickness *c.* 0.6-0.9. Cylindrical short hollow base. Classification: Almagro 51 c (earlier variant). Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR6/8; ext. surf. 7.5YR6/8. Visual characteristics: hard-fired, rough fabric with both irregular fracture and texture. Abundant and variable size inclusions: on the external surface and in the core abundant sub-rounded large and medium-size brown grains and abundant white sub-angular inclusions (limestone?). Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Diogo 1987; Peacock and Williams 1986: 132-133; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996A1101.8 Base (Fig. 47)
Provenience: s. 1101. Max height 4.5; wall thickness 0.9. Part of the short spike. Classification: Dressel 14. Production: Tejo/Sado valleys. Contents: fish-based products. Fabric colour: core 7.5YR6/8; ext. surf. 7.5YR6/8. Visual characteristics: hard-fired, rough fabric with irregular fracture and texture, abundant and variable size inclusions: on the external surface and in the core abundant sub-rounded large and medium-size brown grains and abundant white sub-angular inclusions (limestone?). Date range: Claudian period - early third century AD. References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Meyet 1990: *passim;* Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim,* 2008: *passim*; Raposo and Viegas 2013.

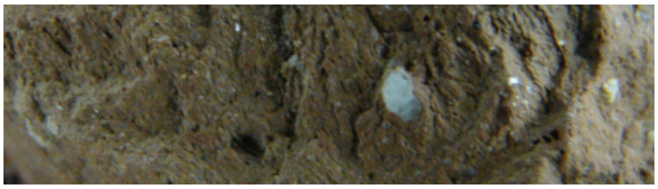
Fig. 47 No. inv. AMM1996A1101.8: the fabric.

AMM1996D2302.31 Rim and handle (Fig. 48)
Provenience: s. 2302. Diameter 9; wall thickness 0.5; max height 4.4. Everted rim from which curves one handle, elliptical in section. Classification: Almagro 51 c (late variant). Production: Tejo/Sado valleys (?). Contents: fish-sauce products. Fabric colour: core 7.5YR7/10; ext. surf. 7.5YR6/10. Visual characteristics: hard-fired, rough fabric with irregular fracture and texture, abundant and variable size inclusions: on the external surface and in the core abundant sub-rounded large and medium-size brown grains and abundant white subangular inclusions (limestone?). Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Silva, Coelho-Soares and Correia 1990; Viegas, Raposo and Pinto 2014.

AMM1996D2302.32 Rim and handle
Provenience: s. 2302. Diameter unspecified; wall thickness 0.7. Triangular rim, handle joined under the rim. Classification: Dressel 23. Production: Guadalquivir valley (?). Contents: olive based products. Fabric colour: grey core sandwiched between lighter zones; salt-whitened surface. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, moderate and variable size ill-sorted inclusions. Date range: (late) third - sixth century AD. References: Remesal Rodríguez 1983; Peacock and Williams 1986: 141; Berni Millet 1998; Carreras Monfort 2005c; Berni Millet and Moros Díaz 2012.

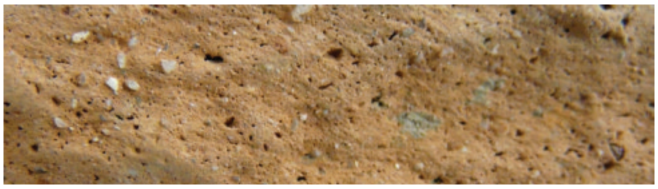
Fig. 48 No. inv. AMM1996D2302.31: the fabric.

AMM1996D2302.33 Handle
Provenience: s. 2302. Thickness 1.7, width 4.3. Vertical handle, elliptical in section, with three grooves. Production: Tejo/Sado valleys (?). Fabric colour: core 7.5YR 5/2; ext. surf. reddish/yellow Muns.7.5YR 7/6. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains).

AMM1996D2302.34 Base (Fig. 49)
Provenience: s. 2302. Max height 14.5; thickness 0.9-1.5. Long horrow troncoconical base. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys (?). Contents: fish-sauce products. Fabric colour: core 7.5YR 5/2; ext. surf. reddish/yellow Muns.7.5YR 7/6. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains). Date range: third - (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996D2302.35 Handle
Provenience: s. 2302. Handle thickness 1.4, width 3.9; wall thickness 0.9. Vertical handle with two grooves. Production: local production (?). Fabric colour: core pale reddish-brown; ext. surf. dark-red. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains).

AMM1996D2302.36 Handle
Provenience: s. 2302. Max thickness 2.1, width 4.6. Bifid handle. Classification: Dressel 2-4. Production: local production (?). Contents: wine (?). Fabric colour: core pale reddish-brown; ext. surf. dark-red. Visual characteristics: hard-fired, harsh sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains). Date range: 70 BC - early third century AD. References: Zevi 1966; Hesnard 1977; Hesnard and Lemoine 1981; Arthur 1983; Peacock and Williams 1986: 105-106; Tchernia 1986; Panella 2001; Williams, Panella and Keay 2005.

AMM1996D2302.37 Rim and handle (Fig. 50)
Provenience: s. 2302. Diameter 10.6; handle thickness 2.2, width 4.4. Jutting triangular-shaped rim; rounded handle from rim, elliptical in section. Classification: Almagro 50. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 7.5YR7/10; ext. surf. 7.5YR6/10. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains). Date range: third - fifth century AD. References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Meyet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

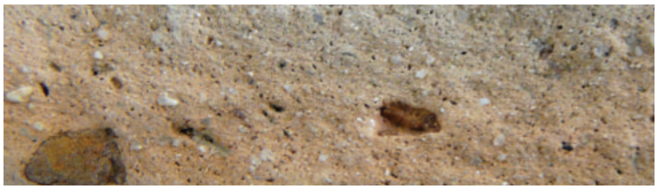

Fig. 49 No. inv. AMM1996D2302.34: the fabric.

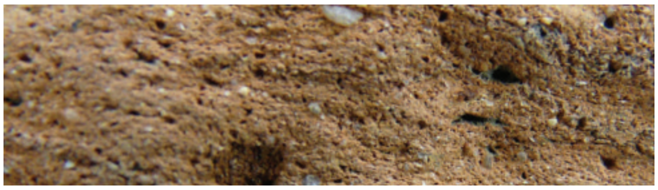

Fig. 50 No. inv. AMM1996D2302.37: the fabric.

AMM1996D2302.38 Rim
Provenience: s. 2302. Diameter 10.6; wall thickness 0.8. Triangular rim, rounded. See no. inv. AMM1996D2302.39. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys (?). Contents: fish-sauce products. Fabric colour: core 5YR6/6 (pale grey); ext. surf. 7.5YR7/8. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains). Date range: third - (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986:132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996D2302.39 Rim
Provenience: s. 2302. Diameter 10.6; wall thickness 0.7. Triangular rim, rounded. See no. inv. AMM1996D2302.38. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys (?). Contents: fish-sauce products. Fabric colour: core 5YR6/6 (pale grey); ext. surf. 7.5YR7/8. Visual characteristics: hard-fired, rough sandy fabric with irregular fracture and texture, abundant and variable size ill-sorted inclusions (white, black, grey and brown grains). Date range: third - (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

I.8 AS MOEDAS

José Ruivo

a Introdução

O presente catálogo organiza-se em três apartados compostos, sucessivamente, pelas moedas achadas na área do Fórum, nas Termas (cap. II.9) e na Porta Sul (cap. III.9).

Dentro de cada apartado o material apresenta-se distribuído por períodos cronológicos mais ou menos vastos, e dentro de cada período, encontra-se arrumado por imperadores/casas da moeda segundo a ordem temporal das emissões.

Na intenção prática de aligeirar o catálogo, só excepcionalmente se fazem descrições pormenorizadas das moedas. Para os bustos dos anversos adoptou-se um sistema de códigos que se apresenta mais adiante. Para os reversos, apenas se descrevem sucintamente aqueles que nos parecem susceptíveis de gerar confusão. Num ou noutro caso, concretamente nos casos das moedas das séries *Divo Claudio* e *Fel Temp Reparatio*, em que a mesma legenda é utilizada para tipos monetários diferentes, recorremos a códigos que permitem de imediato destrinçar as particularidades de cada um deles.

Na descrição de cada moeda são considerados os seguintes elementos, por esta sequência: legenda do anverso, número de ordem, busto, legenda do reverso (com ou sem referência ao tipo, consoante as circunstâncias), marca da casa da moeda (quando presente), peso em gramas (no caso das moedas fragmentadas o peso vai acompanhado de F ou FF, consoante o grau de fragmentação seja menor ou maior), indicação da correspondência da moeda aos catálogos bibliográficos de referência (RIC ou outro) e, por fim, a referência que se encontra associada a cada moeda (número de inventário, proveniência ou outro).

Códigos dos bustos

A: Cabeças

A1	cabeça descoberta
A2	cabeça laureada
A3	cabeça laureada, com vestígios de panejamento no ombro esq.
A4	cabeça laureada, mas com vestígios de panejamento na base do pescoço, à frente e atrás
A5	cabeça radiada
A6	cabeça com coroa rostral
A7	cabeça com diadema de pérolas
A8	cabeça com diadema de rosetas
A9	cabeça com diadema de louros e de rosetas
A10	Cabeça velada

B: Bustos couraçados

B1	busto laureado, couraçado
B2	busto radiado, couraçado
B3	busto com diadema de louros e rosetas, couraçado
B4	busto com diadema de rosetas, couraçado
B5	busto laureado, couraçado, com lança apontada para a frente e escudo no braço esq.
B6	busto radiado, couraçado, visto de frente, com lança sobre ombro direito e escudo no braço esquerdo
B7	busto descoberto, couraçado

C: Bustos drapejados

C1	busto laureado, drapejado
C2	busto laureado, drapejado, visto de trás
C3	busto laureado, drapejado, com globo nicéforo
C4	busto radiado, drapejado, visto de trás

D: Bustos drapejados e couraçados

D1	busto descoberto, drapejado e couraçado
D2	busto descoberto, drapejado e couraçado, visto de trás
D3	busto laureado, drapejado e couraçado
D4	busto laureado, drapejado e couraçado, visto de trás
D5	busto com diadema de pérolas, drapejado e couraçado
D6	busto com diadema de rosetas, drapejado e couraçado
D7	busto com diadema de louros e rosetas, drapejado e couraçado
D8	busto radiado, drapejado e couraçado
D9	busto radiado, drapejado e couraçado, visto de trás
D10	busto com diadema de pérolas, drapejado e couraçado, segurando globo com a mão direita

E: Bustos com elmo

E1	busto com elmo, couraçado
E2	busto com elmo, couraçado, lança sobre o ombro direito
E3	busto com elmo e manto
E4	busto laureado, com elmo, manto e ceptro
E5	busto laureado, com elmo, couraçado
E6	busto com diadema de pérolas, elmo, lança e escudo

F: Bustos das Imperatrizes

F1	busto diademado, drapejado
F2	busto diademado, drapejado, sobre crescente
F3	busto com penteado elaborado, manto ornamental e colar
F4	busto com penteado elaborado, manto simples e colar

Nota: os bustos ou cabeças voltados para a esquerda surgem acompanhados do sufixo **e**. Considerando a existência de numerosos casos de bustos ou cabeças cujas características não puderam ser determinadas na íntegra, optou-se por utilizar as seguintes indicações: 1) busto com características indeterminadas, voltado para a direita (X) ou para a esquerda (Xe); 2) busto com características indeterminadas, mas laureado (X1); 3) cabeça ou busto com características indeterminadas (A/X). Nos casos em que não foi sequer possível determinar a posição do busto ou da cabeça utilizou-se a letra Z.

Abreviaturas
Bastien = Bastien 1972.
Elmer = Elmer 1941.
LRBC = Carson, Hill and Kent 1989.
RIC I = Sutherland 1984.
RIC II (1) = Carradice and Buttrey 2007.
RIC III = Mattingly and Sydenham 1968.
RIC V (1) = Webb 1968a.
RIC V (2) = Webb 1968b.
RIC VI = Sutherland 1967.
RIC VII = Bruun 1966.
RIC VIII = Kent 1981.
RIC X = Kent 1994.
RPC = Burnet, Amandry and Ripollès 1992.
RRC = Crawford 1975.

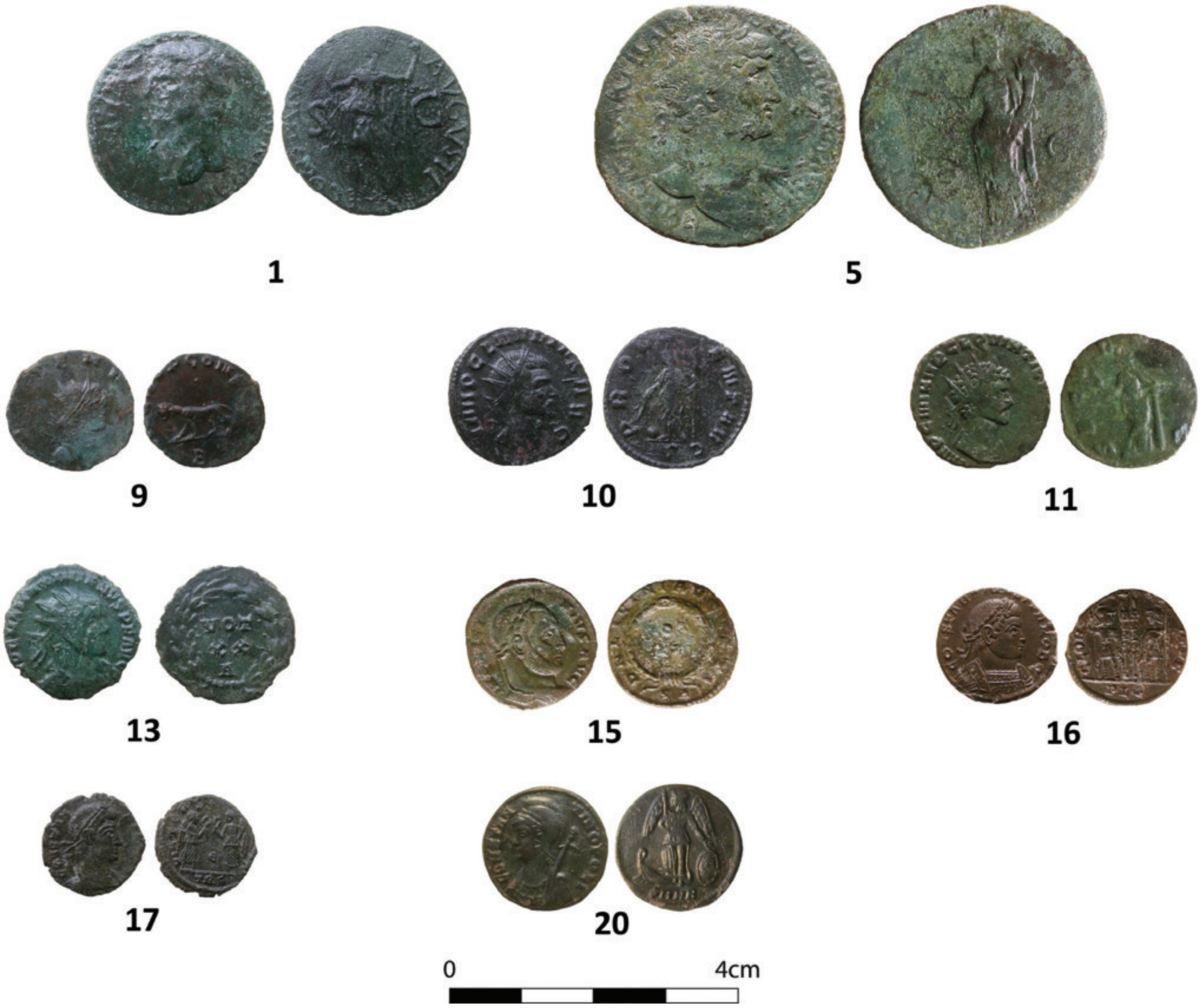

Fig. 51 *Ammaia*, Forum. Coins catalogue nos. 1, 5, 9, 10, 11, 13, 15, 16, 17, 20.

Nº	*Busto*	*Reverso*	*Marca*	*Peso*	*Bibliografia*	*Referência*	*Fig.*

O alto império

1. Período 27 a.C.-68

CLÁUDIO I

Cunhagens provinciais

post 41

[TI CLAVDIV]S CAES[AR AVG] P M TR P IMP (Asse)

1.	A1e	CONSTAN[TIAE] AVGVSTI S C		9,89	cf. RIC I2 95	NV.99.293	Fig. 51

[TI CLAVDI]VS CAESAR [...] (Asse)

2.	A1e	Ilegível; figura feminina não identificada		9,36	-	NV.99.290	

[TI CLAVDIVS C]AESAR [...] (Asse)

3.	A1e	Fruste		8,53	-	LXX	

2. Período 68-96

TITO

Casa da moeda oriental (Trácia?)

80-81

IMP T CAES DIVI VESP F AVG PM TR [P P P COS VIII] (Sestércio)

4.	A2	[S C]; Marte caminhando para a dta., com lança e troféu		23,01	RIC II (1) 499	NV.99.295	

3. Período 96-192

ADRIANO

Roma

117-138

IMP CAESAR TRAIANVS HADRIANVS AVG (Sestércio)

5.	A3	[P]O[NT MAX TR POT COS ...] S C; figura feminina de pé para a esq. (Felicitas?), com cornucópia e caduceu		23,86	-	NV.99.294	Fig. 51

4. Imperador e casa da moeda indeterminados (séculos I-II ?)

Anv.: Ilegível (Asse/Dupôndio ?)

6.	Z	Fruste		4,50	-	LXXVII	

O século III

1. Período 193-260

SEPTÍMIO SEVERO (para JÚLIA DOMNA)

Roma

196-211

[IVLIA AVGVSTA] (Sestércio)

7.	F1	[MATER DEVM S C]; Cibele		19,05	RIC IV (1) 859	8233	

2. Período 260-294

GALIENO

Roma

5ª série (266)

[GALLI]ENVS AVG (Antoniniano)

8.	A5	MARTI [PA]CIFERO	A -//-	2,99	RIC V (1) 236	6519	

6ª série (267-268)
[GALLI]ENV[S AVG] (Antoniniano)

9.	A5	LIBERO P CONS [AVG]; pantera para a esq.	- -//B	1,95	RIC V (1) 230	6502	Fig. 51

CLÁUDIO II
Roma
Emissão IV (270)
IMP CLAVDIVS AVG (Antoniniano)

10.	A5	PROVIDENT AVG	- -//ς	2,43	RIC V (1) 94	6506	Fig. 51

QUINTILO
Roma
270
IMP C M AVR CL QVINTILL[VS AVG] (Antoniniano)

11.	B2	SECVRI[T AVG]	- ?//-	1,88	RIC V (1) 31	NV.99.287	Fig. 51

DIVO CLAUDIO
Imitação
post 270
DIVO CLAVDIO (Antoniniano)

12.	A5	CONSE[CRAT]IO; Altar 1b		1,24	cf. RIC V (1) 261	6523

3. Período 294-305

MAXIMIANO
Roma
c. 297-298
IMP C M A MAXIMIANVS P F AVG (Neoantoniniano)

13.	D8	VOT / XX	A//-	2,21	RIC VI 76b	NV.06.10	Fig. 51

Cartago
c. 303
[IMP C] MAXIMIANVS P F [AVG] (Neoantoniniano)

14.	D8	VOT / XX	FK//-	1,25F	RIC VI 37b	NV.99.278

O século IV

1. Período 305-330

Arles
IMP LICI-NIVS AVG (321)

15.	A2	D N LICINI AVGVSTI, VOT / XX	- -//SA	2,03	RIC VII 229	NV.04.39	Fig. 51

2. Período 330-348

Lyon
CONSTANTINVS IVN NOB C (330-331)

16.	B1	GLOR-[I]A EXER[C]-ITVS (2 estdt.)	- -//PLG	2,19	RIC VII 238	LXXXIII	Fig. 51

Trier
CONSTAN-S [P F AVG] (347-348)

17.	D5	VICTORIA[E DD AVGG Q NN]	ε//TRS	1,51	RIC VIII 199	NV.04.40	Fig. 51

Roma

D N FL CONS[TANS AVG] (337-340)

18.	D7	GLO[R-IA EXERC-ITVS] (1 estdt.)	- -//⸙RT⸙	1,03	RIC VIII 52	NV.99.284

Cízico

DV CONSTANTI-NVS P T AVG[G] (341-348)

19.	A10	VN - MR	- -//SMKB	1,46	RIC VIII 46	NV.99.291

Nicomédia

CONSTAN-TINOPOLI (330-335)

20.	E4e	Vitória sobre proa	- -//SMNB	1,70	RIC VII 196	6507	Fig. 51

Casa da moeda ocidental

[C]ONSTA[N-TIVS ...] (341-348)

21.	D7	[VICTOR]IAE DD AVG[G Q NN]	- -//?	0,67F	-	NV.99.282

Anv.: Ilegível (Constante/Constâncio II)

22.	D?	[V]ICTORIAE DD [AVGG Q NN]	?//?	0,78F	-	NV.99.283

Casa da moeda oriental

[D N CONSTAN]-TIVS P F AVG (341-348)

23.	A7	VOT / XX /MVLT / XXX	- -//?	0,97	-	NV.99.277

Casa da moeda indeterminada

[...] CON[...] NOB C (Constantino II/Constante/Constâncio II) (335-337)

24.	B1?	GLOR-IA EXERC-[ITVS] (1 estdt.)	- -//?	1,52	-	LXXIX

3. Período 348-364

Lyon

355-360

[D N CONSTAN]-TIVS P F AVG

25.	D5	FEL TEMP-REPARATIO (*FH*3)	- -//[...]LG	1,20	RIC VIII 189 (?)	NV.99.279

Arles

355-361

D N CONSTAN-TIVS P F AVG

26.	D5	FEL TEMP R-EPARATIO (*FH*3)	M//?CON	1,91	RIC VIII 269	NV.99.292

Aquileia

352-354

D N CONSTANTIVS IVN NOB C

27.	D1	FEL TEMP-REPARATIO (*FH*3)	II -//AQT	1,72	RIC VIII 209	LXXXI

Roma

352-361

[D N CO]NSTAN-TIVS P F [AVG]

28.	D5	Ilegível; tipo *Fel Temp Reparatio (FH3)*	- -//?	1,29	R/ de Roma	6510

D N CONST[AN]-TIVS P F AVG

29.	D5	[FEL TEMP]-REPARATIO *(FH3)*	- -//?	1,63	R/ de Roma	LXXX

Constantinopla

355-361

D N CL IVLIANVS NOB [CAES]

30.	D1	FEL TEMP RE-PARA[TIO] (*FH*3)	•M•//CONSH [...]	1,56	cf. RIC VIII, p. 460	NV.99.285

Cízico
355-361
[D N] CO[NSTAN-TIVS P F AVG]

31.	D5	[FEL TEMP RE] - PARATIO (*FH*3)	- -//[S]MKΓ	1,87	RIC VIII 110	NV.99.286

Alexandria
355-361
D N [CONSTAN]-TIVS P F AVG

32.	D5	FEL TEMP - [REPARATIO] (*FH*3)	- -//ALEΓ	1,77	RIC VIII 82	NV.99.289

Casa da moeda indeterminada
351-361
D N [CON]STAN-TIVS P F AVG

33.	D5	[FEL TEM]P-REPARATIO (*FH*3)	- -//?	1,20	-	NV. 99.281

D N CONS[TAN-T]IVS P F AVG

34.	D5	FEL TEMP-[REPARATIO] (*FH*3)	- -//[...]	1,70	-	NV.99.276

355-361
D N CONSTAN-[TI]VS P F AVG (AE 4)

35.	D5	SPES REI-PVBLI[CE]	- -//?	2,12	-	LXXVI

Anv.: Ilegível (Constâncio II/Juliano) (AE 4)

36.	D?	Ilegível; tipo *Spes Reipublice*	?	0,78F	-	NV.99.280

4. Período 364-402

Roma
378-383
D N GRATIA-NVS P F AVG (AE2)

37.	D5	REPARATIO REIPVB	- -//SMRQ	3,88	LRBC 750	LXXVIII

Aquileia
378-383
[D N THEODO]-SIVS P F AVG (AE2)

38.	D5	REPARATIO [REIPVB]	- -//SMAQ[...]	3,40	LRBC 1067	LXXXII

5. Imitações

2ª metade século IV-século V (?)
Anv.: [...]VS NOB C (*minimus*)

39.	X1	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//?	0,56	-	NV.99.288

Anv.: Ilegível (*minimus*)

40.	D?	Ilegível; tipo *Fel Temp Reparatio* (*FH*3)	?	0,43	-	NV.04.119

PART II

THE BATHS OF THE FORUM

II.1 THE OLD EXCAVATIONS (1996–2003)

Cristina Corsi

The bath complex, named after its proximity to the Forum, is located in the very central area of *Ammaia*, in what has been defined as "Block XXVI"[1], and is positioned somewhat unfortunately at the border of the road connecting Portalegre to Marvão (N359) (see Fig. 3, p. 5). As we saw above (Introduction, p. 6), the opening of this road in the 1920s caused severe damage to the preservation of the archaeological evidence, and only recently the geophysical survey has allowed us to "fill some of the gaps" in the mapping of the structures located in the monumental centre of the town (Verdonck and Taelman 2012: 72-75; see *infra* section 3). Nevertheless, it is the presence of some remaining ruins above ground that attracted the attention of the archaeologists of the *Fundação Cidade de Ammaia*. They started, in October 1996, the excavations in what was soon identified as a public thermal complex, situated immediately S of the Forum. The excavations were planned with the traditional system of squares of 4 by 4 m, separated by baulks 1m wide, but in some areas the baulks were also excavated to create somewhat wider areas (Fig. 52).

The removal of an accumulation of stones and rubble near the fence of the rural property Quinta do Deão, near the roadside of N359, brought to light a portion of a rectangular room or space, where the walls and the floor were plastered with "*cocciopesto*"[2], and remains of marble slabs were still covering the internal floor surface (*Relatorio* 1996: 9, see Fig. 52). The space was, therefore, interpreted as a bath, accessible by a small flight of three steps nested in the northern corner. In square 1308B, another wall, parallel to the north-eastern wall of this bath, was observed at a distance of *c.* 0.40m. This wall was partially destroyed by a perpendicular conduit, which runs orthogonally from the north-eastern wall of the bath and is composed of tile fragments and covered with schist slabs. In the same year, excavation work also started in square 1408B, where the tops of other walls where observed; the walls that were unearthed here and in square 1409 were connected to the western side of the bath, and they delimited a rectangular space (2.80 by 5.20m) (*Relatorio* 1997: 18).

Between 1997 and 1998, excavation also began in squares 1409/1309/1310, and in 2001 work in the area was resumed with the opening of squares 1109 and 1110. The most relevant discovery was a huge *opus caementicium* wall, on average 1.90m wide, perfectly NE-SW oriented. On its south-western side, was a sewer comprised of a parallel wall of a different construction technique, and covered with schist slabs, while the opposite side was bordered with granite blocks 0.70m long and 0.40–0.45m wide. Both of these structures also extended into square 1209.

In square 1109 the archaeologists remarked that while the north-eastern part was almost sterile of finds, in the south-western corner several pieces of "*cocciopesto*" and fragments of ceramic building material were found, mixed with an abundant quantity of fragments of common ware pottery, Red Slip Ware, glass and, exceptionally, a metal amulet in the shape of a phallus and a gem for a ring with an intaglio of Asclepius (*Relatorio* 2001: 73–74). In square 1110, the lowest levels were characterised by the presence of pieces of "*cocciopesto*", while the upper levels, heavily affected by ploughing, were richer in fine wares and glass fragments (*Relatorio* 2001: 74). Among the "remarkable" finds in this square was a coin issued to commemorate the foundation of the Lusitanian capital *Augusta Emerita* (see chapter II.9, no. 42, *Relatorio* 2001: 75).

In 2002, minor excavation was undertaken in several squares; among them, it is worth noting the discovery in square 1209 of a sub-circular structure composed of small stones and gravel (*Relatorio* 1998–2001: 35–36). A similar structure was found in 2003 at 540.87m a.m.s.l. inside square 1310, where part of a structure made with schist slabs was also found (*Relatorio* 2003: 20).

In 2003, the excavation team uncovered the north-western part of the conduit, which was revealed in squares 1209, 1109 and 1110. After removing the covering schist slabs, the

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[1] As mentioned in the Introduction, p. 10, the urban street grid of *Ammaia* has been reconstructed through an interpretation of the geophysical survey, covering most of the intra-mural area (Corsi, Johnson and Vermeulen 2012; Corsi 2012a). The rectangular blocks defined by the orthogonal crossing of NE-SW oriented streets (conventionally named *decumani*) and NW-SE oriented streets (the so-called *cardines*) generates a chessboard of at least 43 blocks, separated by at least 8 *decumani* and 4 *cardines*. This *insula* corresponds to what has been identified as Block XXVI, delimited by the *decumani* "I" (at the border with the Forum) and "L" (on the opposite side), and the *cardines* "B" and "C", respectively on the SW and NE sides (see Fig. 7).

[2] In the reports of those early campaigns, this material is incorrectly defined as *opus signinum*. Instead, this has to be considered as a special type of mortar, used for waterproof plastering, where lime is mixed with minute fragments of pottery and bricks: see Introduction, p. 15.

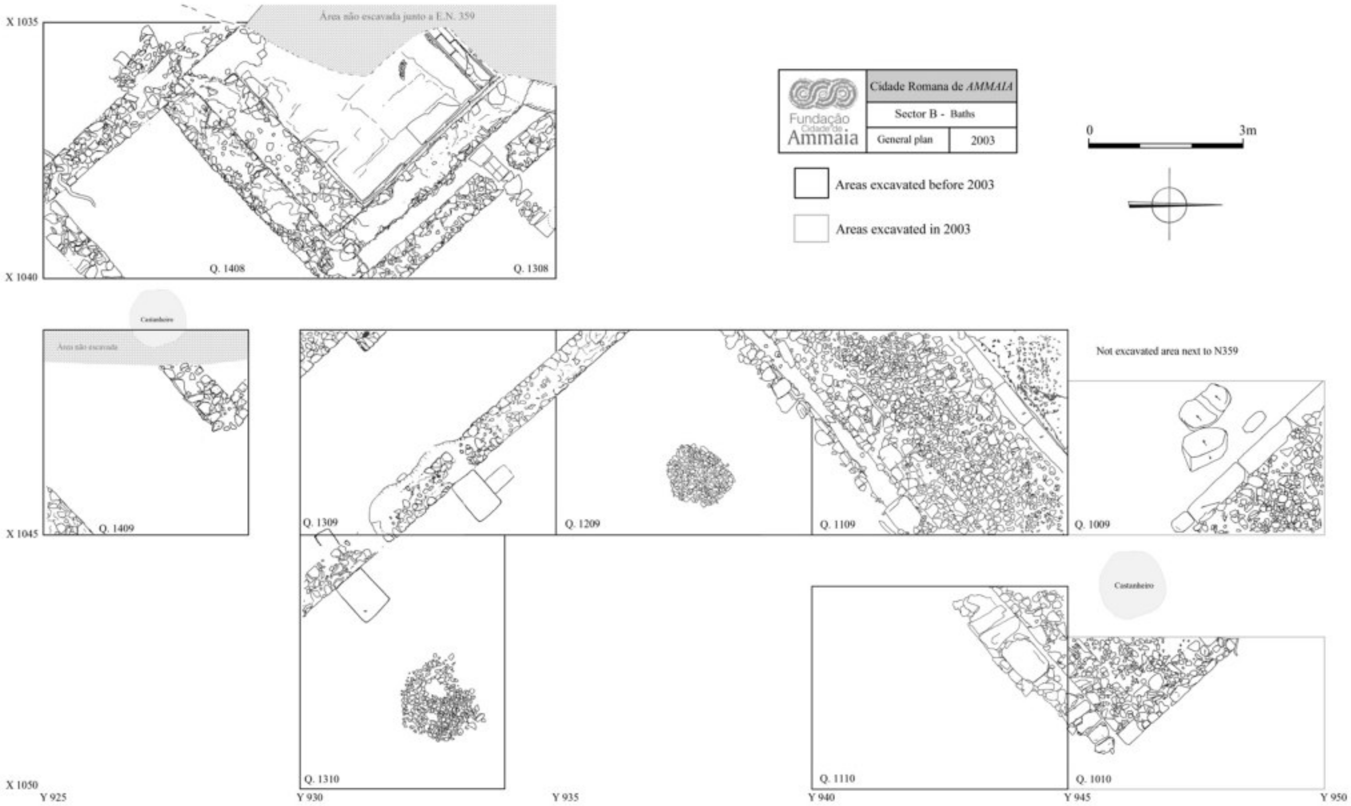

Fig. 52 *Ammaia*, sector B – Baths. Synchronic plan with indication of the position of the squares excavated during the campaigns 1996-2003 (© *Fundação Cidade de Ammaia, Relatorio* 2002: 24).

filling was excavated without detecting any difference in the composition of the sediment, but many finds were collected. Among them, the high percentage of kitchen and common ware, the numerous fragments of glass (notably, several fragments of bracelets and rings in black glass) and objects of personal adornment and jewels (e.g. a ring, gems, three bezel stones, faience beads, golden amulets, bonnet pins, etc.: *Relatorio* 2003: 25) led the archaeologists to hypothesize that this later feature was to be interpreted as a wastewater system for the central area of the town, and was not connected to the function of the thermal complex (*Relatorio* 2003: 28). At the bottom of this sewer, a layer of gravel was found.

The interpretation of the archaeological evidence uncovered in the course of these first campaigns has been published by Sofia Borges (Borges 2002), who defined the presence of a thermal complex (named "*Termas do Foro*") of which a bathtub and the corner of a swimming pool had been almost entirely excavated. This reconstruction implied that an enormous destruction had taken place in the space comprised between the tub and the pool, in the course of which all occupation levels had been obliterated, the only remaining trace of which was the "layer of destruction" of a pavement on a *hypocaustum* which was detectable only in the proximity of the baulk separating squares 1109 and 1110 (layer later denominated SU 47). In the open space created by this destruction activity, a roundish layer of small pebbles mixed with a very poor mortar (later denominated SU 45) was constructed. It was first interpreted as the base of a fireplace or a kiln, but later it was thought to be a foundation base for a pillar, because similar structures (now denominated SU 41 and SU 172[3]) were found after the extension of the excavated area, carried out in the course of the last campaigns.

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[3] It was later shown that these roundish "bases" could not be included with the earliest activity in the stratigraphic sequence of the area, as it would have been inconsistent with the idea that they followed the massive destruction phase: see *infra*.

II.2 THE NEW EXCAVATIONS (2008–2011)

Cristina Corsi, Frank Vermeulen

The decision to start a new series of stratigraphic excavations in this sector was made not only to have a better understanding of the whole plan of this bathhouse, but also to date its prominent phases of construction, use and eventual abandonment. The complex has been considered as a crucial element in the urbanisation and a significant monumental complex in this central part of the city. Furthermore, this area was considered as one of the most suited in the archaeological park to be further developed as a key sector for open air museum display, especially in relation with the monumental Forum area. Three seasonal campaigns have been carried out during the summers of 2008, 2009 and 2011, all of them under the scientific coordination of Cristina Corsi and Frank Vermeulen with site supervision by several young archaeologists[1].

The first year, as strategy of research, it was decided to resume the excavations in the "squares", which were already partly excavated in earlier years. To recuperate part of the stratigraphy, which was not documented in the former excavations, we decided to join these separate trenches into one "open-area" excavation. Removing the intervening baulks gave additional insight into the stratigraphy of the area, while a more open aspect of the site would give the general public a better overview of the (preserved) archaeological structures.

We decided to connect the quadrants properly during these three excavation seasons, to finalise the research on the existing sectors of excavation and to expand the area of the excavation in the area SW of *amb*. B and C in order to better comprehend the planning of the complex, to have a careful understanding of the typology and disposition of the thermal rooms, to investigate their connection with pre-existing building structures and to collect more data about the chronology of these processes. This extension towards the south brought a total surface area of some 370m^2 under excavation, but an "island" of 6.5m by 4m (in *amb*. D) was left unexcavated because of the presence of a very old chestnut tree.

Starting from 2008, all the preserved structures were renumbered according to the "stratigraphic units system", and a SU form was prepared for each context of the walls (foundations, foundation trenches, foundation trenches filling, wall, top destruction layers, etc.), conduits and other architectural elements (revetments, plasters, veneer stones, etc.). It is important to note that before eliminating the baulks separating the squares, different numbers were given to separate segments of the same wall, as long as their connection was not visible; for this reason, some walls have more than one SU number. Numbers of SU have also been assigned to all the layers which were already partially excavated in previous seasons. At the same time, setting aside the division by square, we decided to identify "spaces" or "rooms", which we labelled in Portuguese as "*ambiente*" (Fig. 53) (Corsi and Vermeulen 2012e). Therefore, the newly acquired evidence allowed for the following reinterpretation.

a Re-appraisal of bath and pool structures

What was excavated up to 2003 was interpreted as parts of a vast complex, containing one room which was clearly identified as a bath facility (*amb.* A, Fig. 53), probably heated, and the corner of a well-built *natatio* (*amb.* F, Fig. 53). Between them was situated a large space with a floor initially thought to be laid on *suspensurae* (Fig. 54). This hypothesis proposed that this floor of a heating system was devastated by large-scale robbing, leaving traces of the raised flooring of this wide space only in the proximity of the preserved part of the *natatio*. In this area, *c.* 2m^2 wide, had been found during the old excavations: the remains of a large and thick layer of destroyed *suspensurae* pillars and some remains of the plastering in "*cocciopesto*"[2], mixed with lumps of white mortar, all lying on a layer of ashes (SU 47)[3]. Whether we accept this explanation (considering the

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[1] The first campaign relied upon Devi Taelman as supervisor of the students of several nationalities, the second upon Sophie Dralans and Dimitri Van Limbergen, and the third was conducted under the supervision of Catarina Alves, José Carlos Quaresma and Devi Taelman. The two last campaigns involved the almost-exclusive participation of students from Ghent University, while on all occasions the *Fundação Cidade de Ammaia* provided logistic and scientific support.

[2] See, *supra*, chapter II.1, note 2.

[3] SU 47 and the underneath thick layer of ashes have been left *in situ* for further research, which could eventually confirm our interpretative hypotheses. As we will see soon (*infra*), this reconstruction is now considered only one of the possible interpretations.

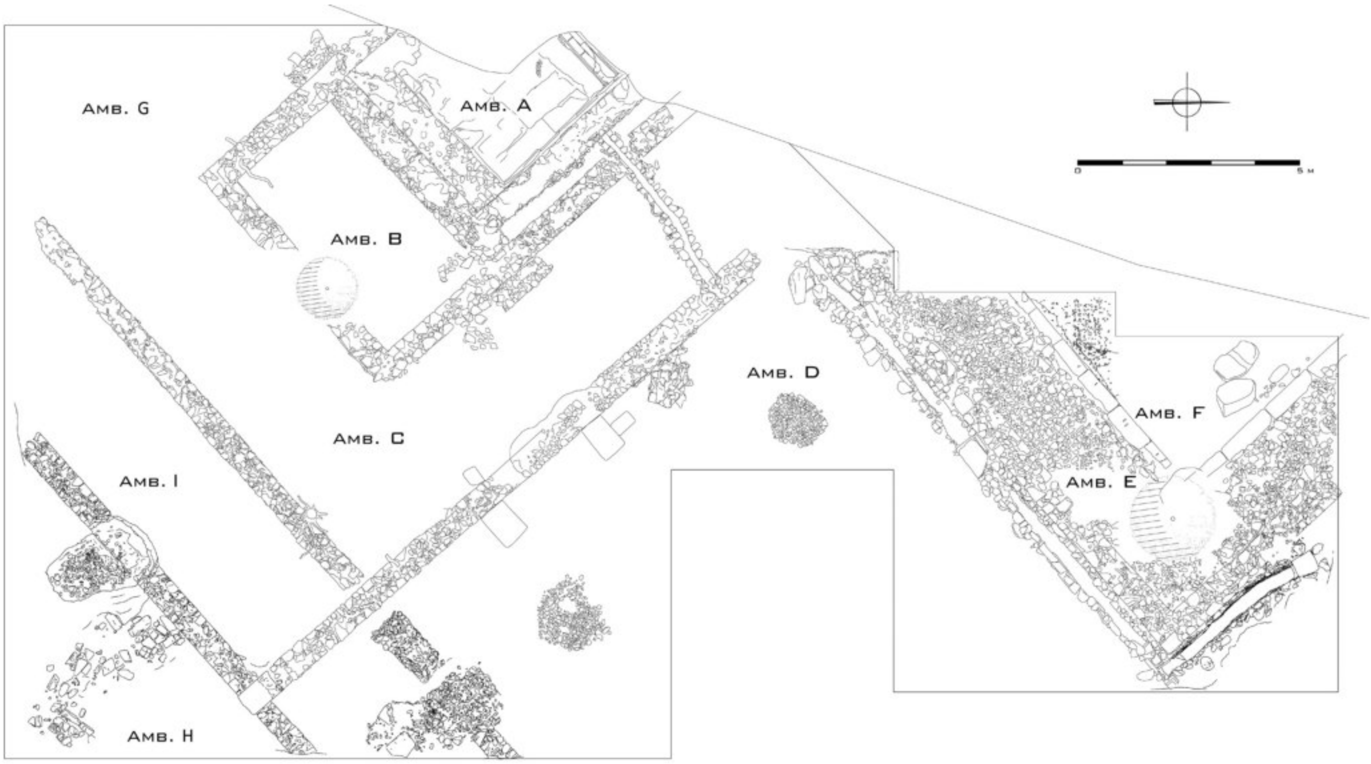

Fig. 53 *Ammaia*, sector B – Baths. Synchronic plan of the structures brought to light at the end of the campaign 2009, with location of the *ambientes* (© *Fundação Cidade de Ammaia - Universidade de Évora*).

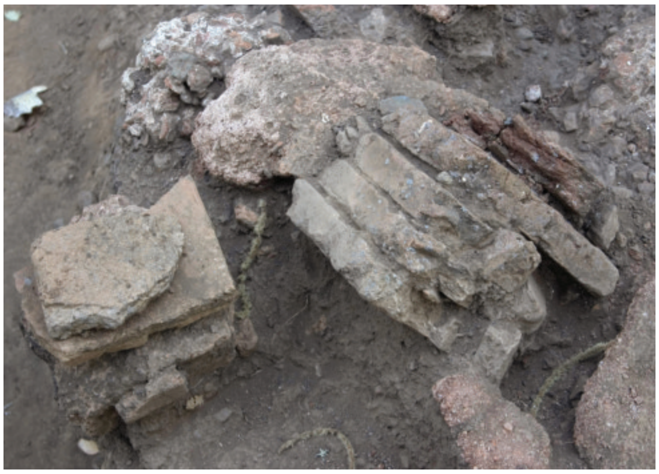

Fig. 54 *Ammaia*, sector B – Baths. Details of *suspensurae* made of small pilasters of *bessales* found in *amb*. D.

fact that only a very small portion of the original floor above the hypocaust would have been preserved), or whether we consider instead this pile of building materials as a dump of rubble, brought here from elsewhere, it is clear that this huge heap of debris was cut in a later phase by a stone-built sewer. The western side of this sewer was constructed with some reused materials (e.g. column drums, SU 65), while on the opposite side, the sewer used the foundation of the wall delimiting the massive nucleus of the *natatio*.

Unfortunately, the stratigraphic connection between *amb*. A/B/C and the *natatio* (conventionally labelled as *amb*. F) was destroyed by the construction of the road N359, and therefore we cannot establish if there is a synchrony in the building activity, and what the relationship between the sector with the bath and the sewer built in a second phase along the foundation of the pool is. However, from the functional point of view, these two sectors, given their strong thermal connotation, are now considered parts of the same monumental complex (see *infra*: section II.2.c).

The bath (*amb.* A) is a rectangular structure (original dimensions 4.20 by 4m), plastered with marble slabs laid on thick layers of pinkish mortar, inserted in a rectangular room which partially reused pre-existing walls. It was made accessible, in the N corner, by a short flight of 3 steps (SU 27), which possibly extended all along the north-western side of the basin, and went through several structural transformations, likely meant to reduce the capacity. In fact, a thick wall in *opus caementicium* was built against the south-eastern wall. It can be interpreted as a bench or, as is likely, a system to reduce the capacity of the large bathtub (from a total surface of 17 to 13.8m^2).

A lead *fistula* conducted water out to a channel covered with schist slabs (Fig. 55) (Corsi and Vermeulen 2012e). This channel breaks the wall SU 8, which belongs to an earlier phase. In fact, the structures of this bath are implanted in such a way as to partially reuse existing walls with the same orientation. The excavations inside the area surrounding the bath (*amb.* C) did not reveal any remains of flooring levels and archaeological finds were very poor, making it difficult to propose an interpretation for its primary use, but it is con-

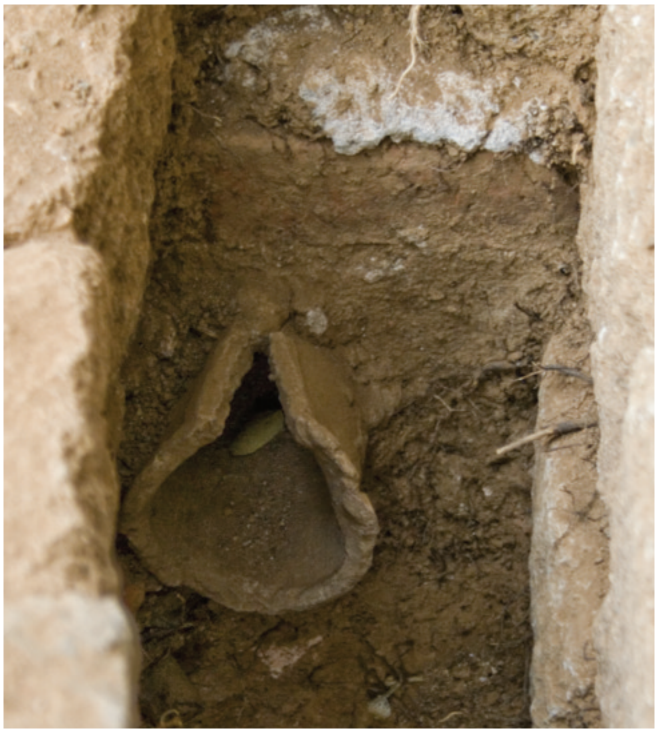

Fig. 55 *Ammaia*, sector B – Baths. The lead *fistula*.

firmed that the bathhouse was not the first building in this location. It was preceded by a probably-rectangular building, the function of which is still unclear, but which cannot at the moment be connected with thermal use. According to the interpretation of the geophysical survey (*infra*) and to the dating of the sparse finds connected with this first occupation phase, it might be partly comprised of pre-Flavian structures inserted in the *insulae*-scheme of the town (Corsi 2012a: 139-144, 146-147; Verdonck and Taelman 2012: 72-75), possibly with a residential function (*domus*?). Some destroyed flooring in *opus spicatum* is associated with this phase.

As expected, the construction of this first building was carried out after the terracing of the sloping topography of the terrain, obtained here through the construction of a large retaining wall. This wall (SU 15/44/87 = 88/135) is likely to be considered the first major urban enterprise undertaken in this area[4]. This activity can be placed broadly in the Claudio-Neronian periods, while, according to the preliminary analysis of associated pottery, the room with the bath (*amb*. A) was constructed at some point in the later Flavian period or even in the early second century.

The *natatio* (or *piscina*) was built with large, well-squared blocks of granite, inserted into the substantial *caementicium* core that delimited the two walls. The interior of the pool was plastered with carefully smoothed mortar, and was probably originally covered with marble slabs.

We can now describe the individual rooms in detail, referring to the SUs as they were distinguished in the course of the 2008–2011 campaigns (with positive layers and structures, deposits, and negative interfaces, cuts), contextualising the finds and establishing stratigraphic relationships with other structures and more generally other "*ambientes*" (Fig. 56). This quite technical and descriptive section is followed by a more interpretative discussion, which considers the main stratigraphic phases observed thus far on this (relative small) excavated part of the Roman bath complex.

Ambiente A

After the phase constituted by *amb*. B (*infra*), the bath or basin (*amb*. A) was built, partially destroying wall SU 31. In its excavated state, *amb*. A was delimited by walls SU 23, SU 17 and SU 28, but we have no clear idea about the original western wall. The latter is at present represented by the short visible segment of wall SU 25 and staircase SU 27 (Fig. 57), which leaned against the second-phase layer of mortar ("*cocciopesto*") revetment (SU 80), and is, therefore, to be interpreted as a transformation of an earlier building plan (*infra*). Considering the poor state of preservation of the walls, on average preserved to less than 0.50m of height, it is not possible to establish whether the bathtub was inserted in a bigger room (e.g., if the wall SU 8 should be considered as the north-eastern delimiting wall of the thermal room) or if the basin was inserted in a kind of niche, and therefore once the bath was built, the top level of wall SU 8 was already lowered at floor level. It is very likely, according to our current understanding, that when the wall SU 23 was built, the inner space of room "B" was filled at least up to its upper preserved level (as is proven by the rough technique of the outer side of the wall, which was clearly built against some kind of earthwork). In this way, in this phase we should imagine a floor level in *amb*. C at the level of the cover stones of sewer 53 (SU 6), more or less corresponding to the top level of walls 8/9, 30 and 31 which would have been, therefore, interred.

As mentioned above, the first-phase basin was also plastered with "*cocciopesto*" (SU 18), as is visible also on wall SU 28. On the northern wall (SU 17), a revetment of marble slabs was carefully installed (preserved height: +/- 0.60m). This is the phase that, in our general interpretation, we have classified as phase IIb.

It is not clear whether the "*cocciopesto*" (SU 18) and the marble slabs originally reached the corner between SU 17 and 23. Surely, in a second phase, the slabs were partially taken away to facilitate the building of wall SU 22 (Fig. 58). The latter has been interpreted as a system to reduce the capacity of the basin or possibly a wide bench to lie or sit on.

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[4] As we will detail soon, the construction of this terracing wall would have already implied a variation on the urban street plan.

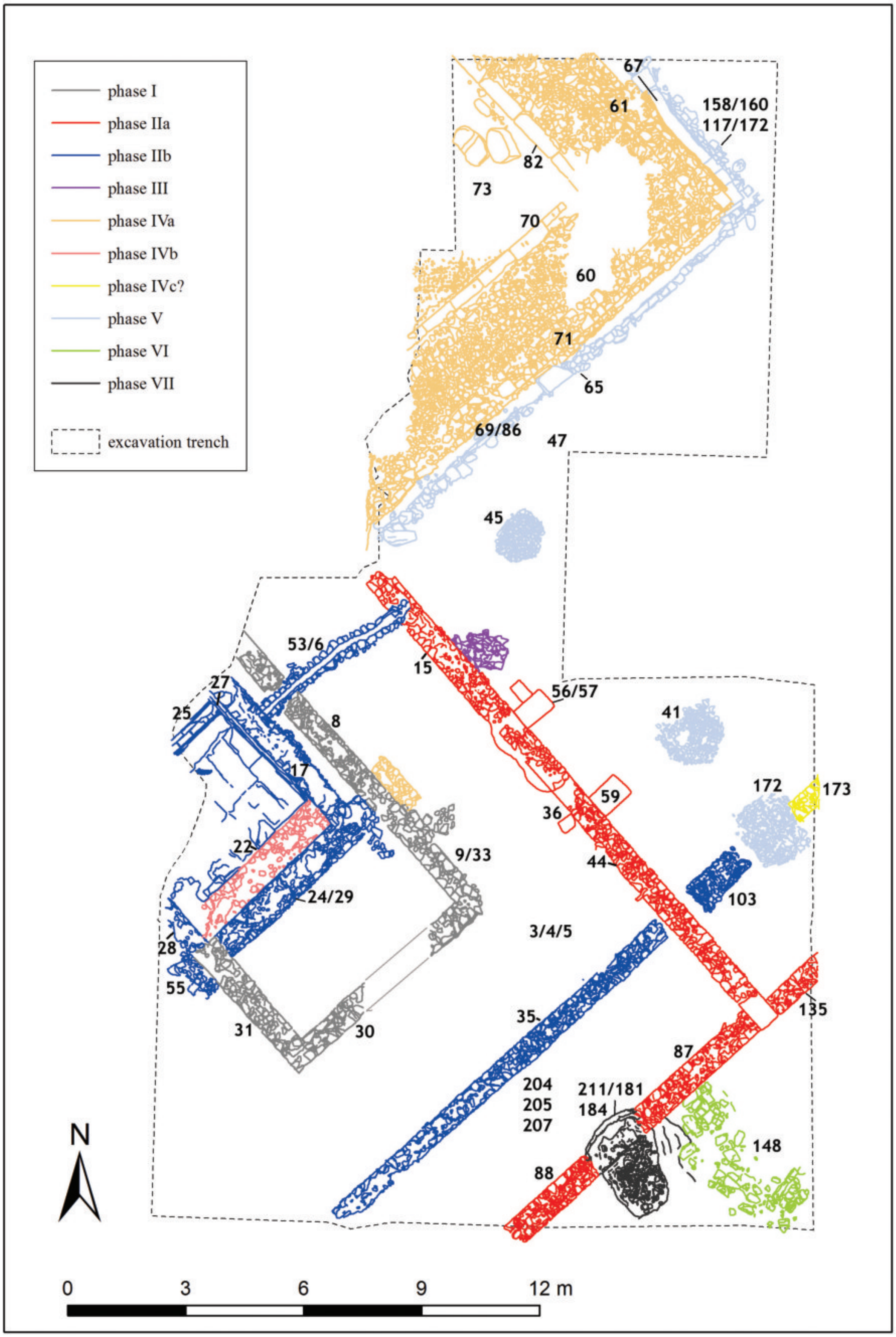

Fig. 56 *Ammaia*, sector B – Baths. Synchronic plan of the structures brought to light at the end of the campaign 2011, with location of the SU numbers (© *Fundação Cidade de Ammaia - Universidade de Évora*).

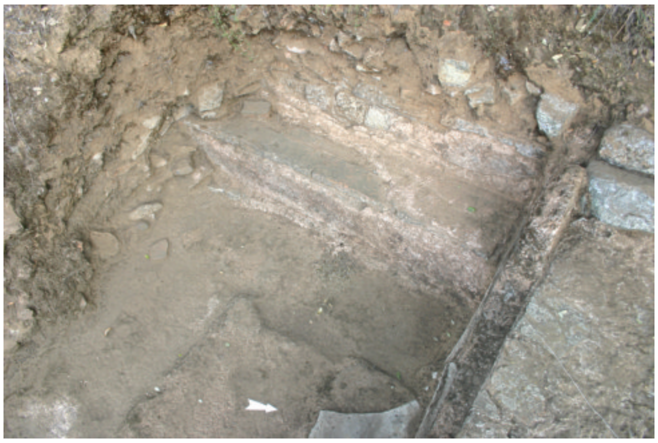

Fig. 57 *Ammaia*, sector B – Baths. Two excavated steps of the staircase which made the bath of *amb*. A accessible on the northern side (SU 27).

Wall SU 22 was plastered with a new layer of "*cocciopesto*" (SU 20), partially covering the marble slabs SU 19, but also covered by other slabs (one is probably sandstone) that could be reused (phase IVb).

The construction of walls SU 17 and 23, respectively with walls SU 81 and SU 24, probably belongs to this later phase. This raising of the surface was undertaken together with an additional thick layer of "*cocciopesto*", that was laid down in the NW corner (SU 80), covered with marble slabs (the latter, likely reused: Phase IVc).

Against this slab, the western wall SU 25 and the steps SU 27, both plastered with "*cocciopesto*" (SU 26), were built (see Fig. 57). The surface of the flight of steps SU 27 was built with rectangular bricks, measuring 0.42 by 0.14 by 0.05m. The latter covers a fragment of a marble slab of the flooring at the SW corner of the excavated area, indicating the possibility that the building of this western wall ought to be interpreted as a third phase in the stratigraphic sequence of the *amb*. A, defined as phase IVc in the general sequence of events in the area.

The water of the basin was evacuated via the channel SU 53, covered by SU 6 (Fig. 59). This channel, built with blocks of granite into the stratigraphy of *amb*. C, breaks the wall SU 8/9.

Under the wall SU 17, the water was conducted into a lead *fistula*, opening into a hole in the marble slabs of SU 19 (see Fig. 55).

Ambiente B

This "room" is only a part of an originally much larger and probably rectangular room, the western part of which was incorporated into *amb*. A in a later phase. Its north-eastern (SU 9) and south-eastern (SU 30) walls were well preserved, up to a total height of 0.70m from the foundation level, apart from some disturbances and significant destruction caused by an extant chestnut tree, while the south-western wall SU 31 was poorly preserved. The walls, which have an average width of two feet (*c*. 0.60m), were primarily built with granite blocks of an irregular cut, positioned with a very small quantity of mortar. A strange (irregular) fragment of tile or brick was also present in wall SU 31. The facing of the inner sides of walls SU 9, 30 and 31 was relatively regular, which seems to indicate that they would have been visible above floor level originally.

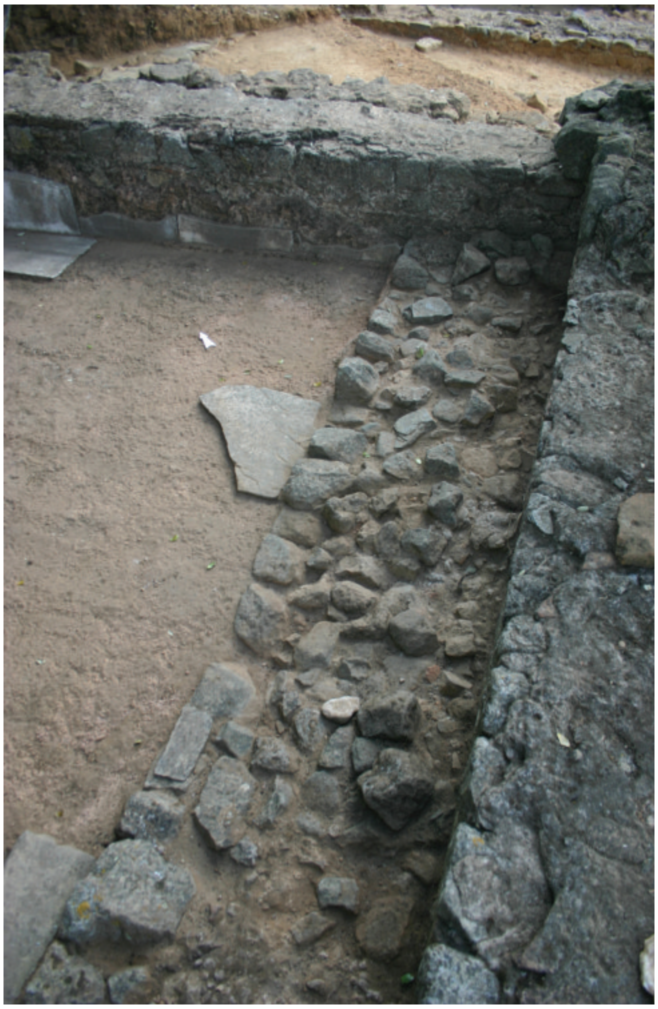

Fig. 58 *Ammaia*, sector B – Baths. View of the bath of *amb*. A from SW with remains of the marble floor and wall *crustae* and the wall SU 22 leaning against wall SU 23.

Currently, only one line of granite blocks is standing on the outside facing of wall SU 30. Here, where former excavations reached a lower level, the foundations (SU 33) are visible: they are comprised of a fairly shallow layer of pebbles and fragments of shale, deposited in a trench without mortar. This is the only indication of the floor level within the outside "corridor" C.

The floor level of *amb*. B remains unknown. The actual fill (SU 29) consisted of a very sterile layer of clay and pebbles and some dispersed larger stones. We are convinced that this fill was intentionally brought here to raise the level, possibly in preparation for the construction of the bath (*amb*. A). So, it remains possible that a kind of pavement or

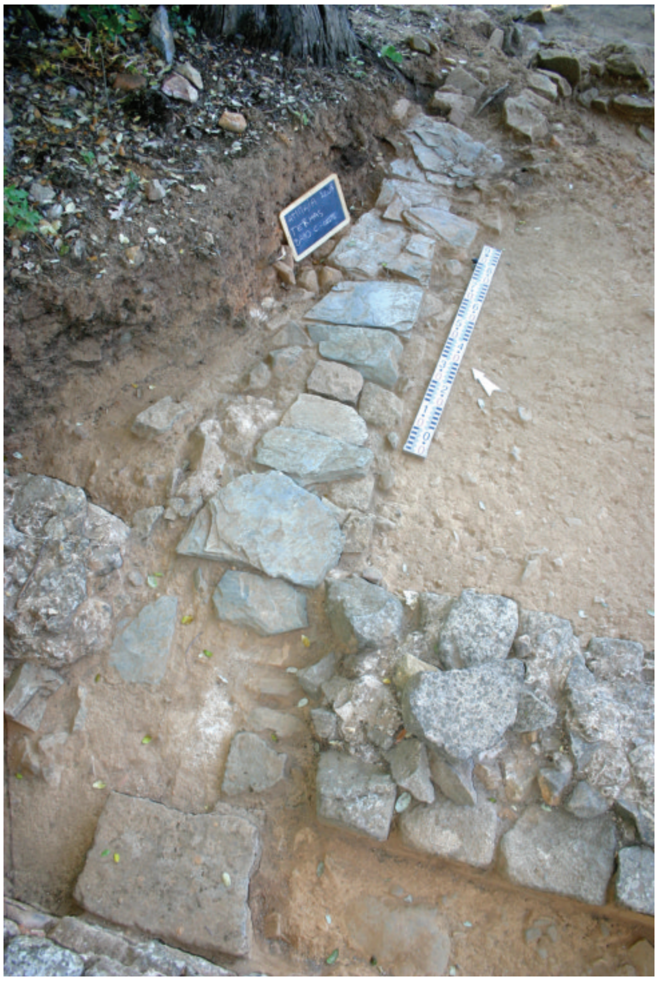

Fig. 59 *Ammaia*, sector B – Baths. View from SW of the channel SU 53, still covered with shale slabs (SU 6), breaking through wall SU 8.

floor is preserved on a lower level, considering the fact that the ground level of the wall SU 30 on the outside is 0.25m lower than the actual level inside *amb*. B.

Ambiente C

The "corridor-like" space, defined as *amb*. C, is delimited by walls SU 8, SU 9 (in common with *amb*. B), SU 15 and SU 44 (at a lower level). The corridor runs around the rectangular building of *amb*. B. The walls SU 8/9 and SU 15 are of a similar building technique, but in SU 15 there is a more abundant use of compact mortar. It is likely that they were built at the same time nonetheless. The wall SU 9 proved to be built in a wide trench, which could not immediately be seen on the surface, but is now clearly detectable in the section of that part spared by our excavation on the western side of the wall (left in place to prevent the wall from collapsing). The blocks of stone, smoothed on the outer surface, were laid, in an orderly fashion, in this trench. It is not clear whether walls SU 12 and SU 15 were built with the same technique because the former excavations had already removed the stratigraphy that surrounded them.

Interestingly, the stratigraphy in the north-western side of *amb*. C (SU 3-4-5) proved to be sterile, although it consisted of clayey soil intentionally brought there, possibly for terracing purposes. In this scenario, we could envisage that wall SU 12 functioned not only as a buttress, but also possibly as a staircase to access the basin (*amb*. A).

We do not exclude the option that the floor level in the eastern part of this *amb*. C was lower than what is currently visible/excavated: in the small section exposed on the southern side of wall SU 44, many lumps of mortar are still visible, proving that a floor level could be still reached with deeper excavation in a future campaign.

After *amb*. C was already filled with the deposits SUs 3-4-5, wall SU 12 was built, aligned with the eastern side of wall SU 9. Its function is still unclear, but we suggest that it could have acted as a reinforcement of wall SU 23 and possibly SU 24. This kind of buttress would also be likely in association with the similar wall SU 55 on the opposite side (on the southern side of SU 28).

Into this same stratigraphy, interpreted as an intentional filling with scarce artefacts, channel/sewer SU 53 was dug, in connection with *amb*. A (see Fig. 59).When we excavated its fill, we confirmed its very sterile composition, consisting of clayey soil mixed with rough uncut stones and cobbles intentionally brought there, probably for terracing purposes (SU 123). The sewer 53 was filled by the SUs 13 and 78.

Given the hardness of the layers which fill the *amb*. C, interpreted as sterile deposits brought here as backfill of this space, the natural soil was not reached here; unfortunately, the excavated layers did not contain many artefacts.

We have to stress that, in the course of the new arrangements of this sector, it is possible that wall SU 15 was already intentionally cut at the actual level, considering that when the sewer 53 was created, the floor level must have been almost at the same elevation as its covering system SU 6 (*supra*).

At the present state of research, given that a deeper level was reached in the former square 1409, without detecting any flooring level, we cannot determine which was the original disposition of this space. On the southern side of wall SU 44, where the stratigraphy inside *amb*. C (SU 36) was artificially cut to reveal wall SU 44, abundant lumps of white mortar can be seen in the "exposed" section. We cannot exclude the possibility that these are traces of a preparation layer for flooring. During this deepening process, wall SU 35, delimiting *amb*. C to the SE, was further investigated. This wall, some 0.80m wide, was regularly built with a facing of well-cut granite stones, most often of triangular shape, with their point integrated in the wall core of smaller uncut stones and whitish mortar. The wall is preserved in height only for *c*. 0.35m max. It rests on a simple and slightly wider foundation, mostly composed of pebbles. When investigating the relationship between walls SU 35 and SU 44, it was first thought that SU 44 cut the former and belonged to an earlier construction phase. A review of the data brought us instead to the conclusion that wall SU 44 was built, likely together with walls 87 = 88 and 135, but before the construction of walls SUs 35 and 103. In fact, the latter appear to have been built in a fill, designed to raise the floor level, that would have been obtained with the construction of walls 44/87 = 88/135, which would also have resulted in an extension of the limit of the *insula* on the SE side.

Ambiente F

The so-called *natatio* was built with large, well squared blocks of granite, well connected to each other (SU 70 and SU 82) (Fig. 60). The blocks are dressed only on the front and lateral sides: the back is rough and is meant to secure into the substantial *caementicium* core SU 60 (Figs. 60, 61). On the opposite, external side, the core of concrete was "contained" by the two broad walls SU 62 and SU 71.

The interior of the pool was plastered with "*cocciopesto*" (SU 73). In the northern corner of the excavated area, two sections of the filling of this *natatio* are still exposed.

Only the northern one has been cleaned and reinterpreted. The pool was initially filled by a natural layer of fine, clayish silt deposited when the upper layer of granite blocks of SU 70 were already removed, probably for reuse elsewhere. At the bottom of the pool, a large heap of debris was intentionally deposited (SU 76). The two layers were later covered by other layers: some of which (for instance SU 79) seem to be of natural formation (silt), others (e.g. SU 75, composed only of flakes of schist) seem to be anthropogenic. At a time when the higher levels of granite blocks of SU 82 were probably already taken away, a strange "structure" of stones mixed with abundant mortar was built, partially above SU 82 and against SU 60. This "nucleus" of mortar can be paralleled to SU 85, a small "nucleus" of *caementicium* with the same characteristics, located on the other side of the *natatio* corner. We had the impression that this SU 85 could be the only portion of a bigger "nucleus of *caementicium*" left after the former excavations. The interpretation is therefore still open: the stratigraphic relationship with the lower layer of granite blocks is clear on the northern side (SU 84 covers SU 82), but it is possible that the upper layer of blocks was thinner, and in this case the "nucleus" would have leant against it, representing a "restoration" phase.

Ambiente D

What we called *amb*. D is a large area composed of the former squares 1109, 1209, 1110, 1310 and part of 1309, and it includes everything N of walls SUs 15 and 44 and everything SE of the *natatio* delimited by the nucleus SU 60. On the eastern side the space is delimited by the edge of the excavation area, except for the unexcavated rectangular area (*c.* 5 by 6.5m) where the presence of a large chestnut tree has made excavation impossible (*supra*). The first (new) excavation activities started here with the abolition of the baulks between squares 1309 and 1209, and between 1109 and 1110. Still, the cleaning and following reinterpretation of the section on the eastern side of the baulk between 1109 and 1110 discouraged us from continuing this activity. In fact, the segment of the layer of destruction SU 47 composed of parts of *suspensurae* (see Figs. 54, 65), large blocks of "*cocciopesto*" and of mud brick, spared from non-stratigraphic excavation because of the presence of the baulk, was cut by the channel built during the construction of the wall 65, parallel to SU 71 (precisely, the wall 65 parallels its foundation SU 66), and, therefore, we decided to excavate the latter first.

As anticipated, the building techniques of the two sides of this channel were different: SU 65 was comprised of

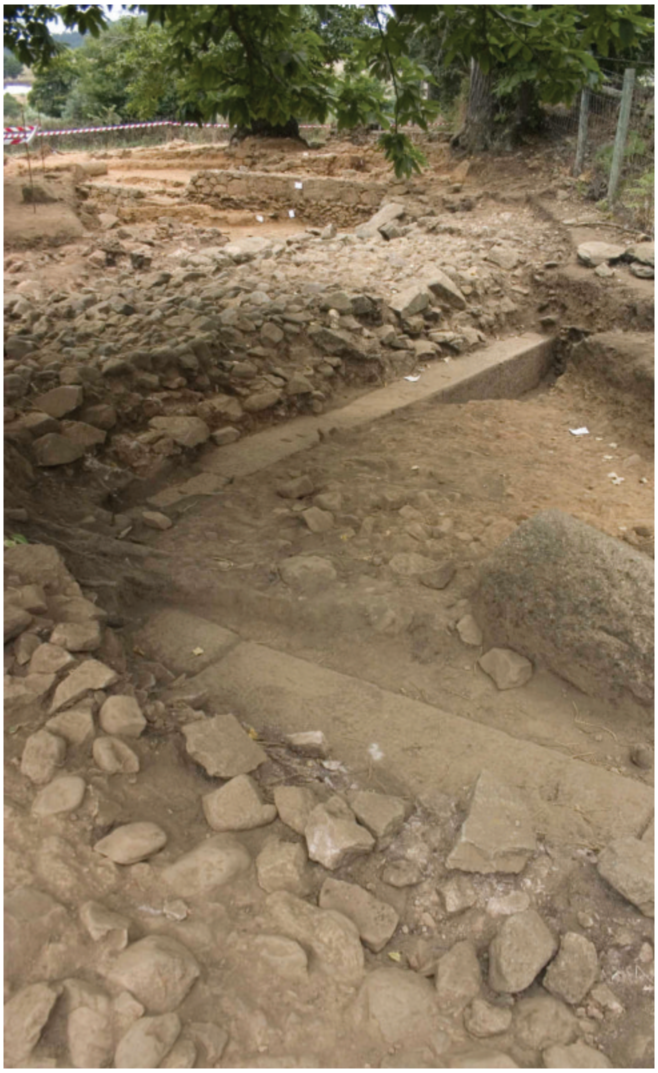

Fig. 60 *Ammaia*, sector B – Baths. View from N of the southern corner of the *natatio* – *amb*. F.

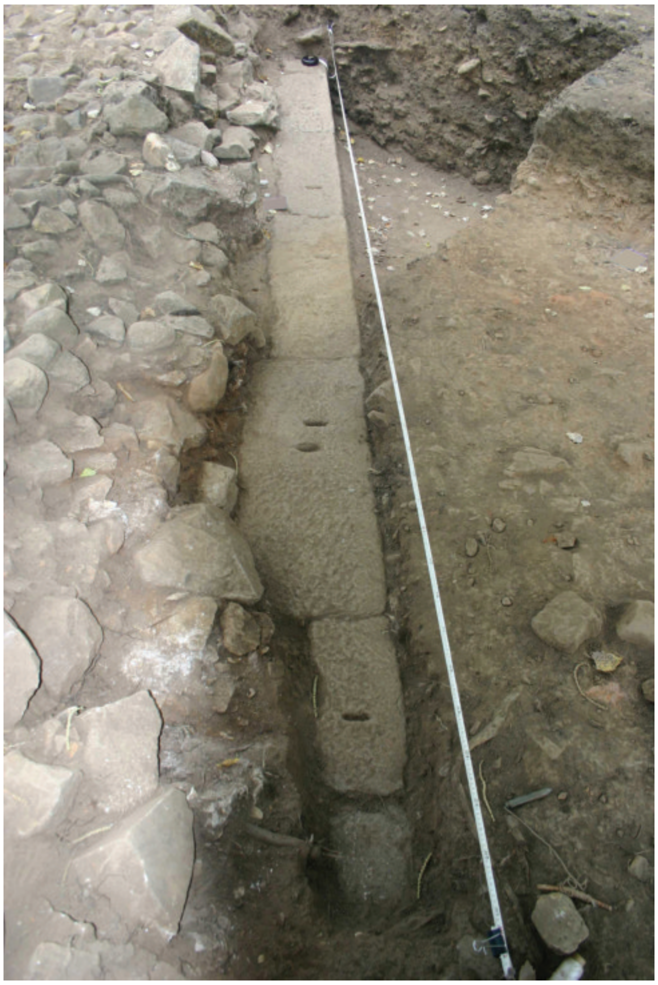

Fig. 61 *Ammaia*, sector B – Baths. Detail of the *natatio* construction with the inner granite blocks and the *opus caementicum* nucleus. Remark the presence of holes for the placing of the big blocks.

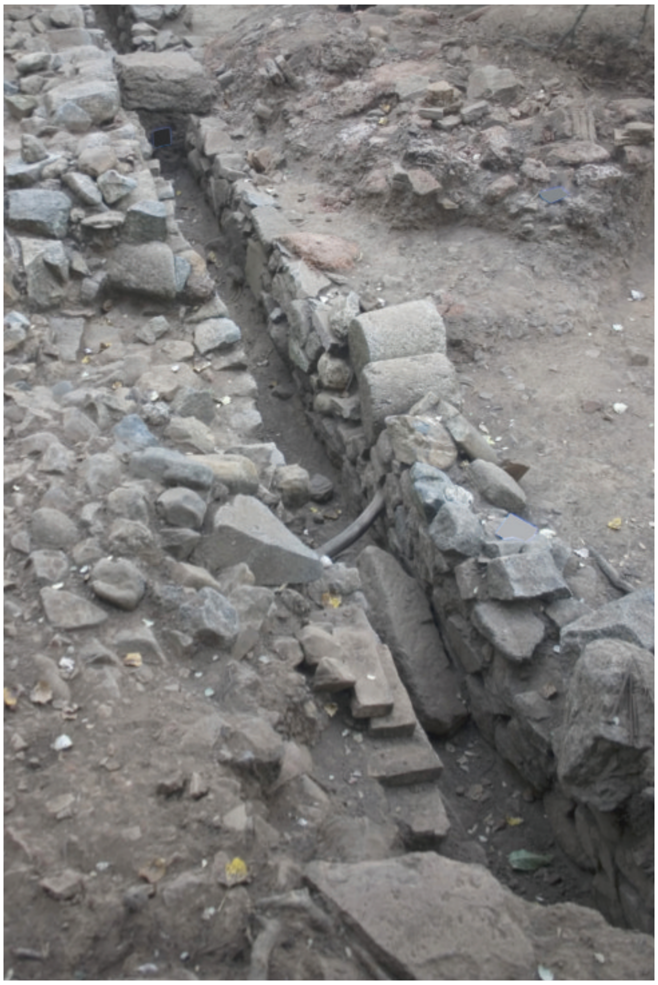

Fig. 62 *Ammaia*, sector B – Baths. The channel SE of the *natatio* retaining wall.

abundant reused materials including granite column drums, bricks, schist, marble slabs, and so on, while foundation SU 66 is composed mainly of mid-sized granite blocks, smoothened on the front (Figs. 62, 63). Still, at the point when wall SU 65 was erected, repairs of SU 66 were undertaken, using the same reused building materials (for instance: blocks of mud brick). It is possible that the part of walls SU 66 and SU 71, in proximity to the excavation limit, at the border with the modern road to Portalegre, went through a "restoration" in a much later phase: six bricks of "modern" production were arranged in four lines. They are likely connected with the disruption of the nucleus SU 60.

This Roman channel was originally covered primarily with slate slabs of medium/large dimensions, while an *in situ* squared block of granite showed that more robust blocks were also used to cap it (SU 67) (see Fig. 63). The western part of the cap of the sewer was already removed during the past campaigns and the content of the channel removed, while the eastern part of it was excavated during the 2008 season. Here the sewer cap, a mixture of shale slabs and other blocks, could be observed (Fig. 63). Inside the channel, two different layers were recognised (SU 69 and SU 86).

Both layers contained finds, but mostly the lowest (SU 86) contained large quantities of brown clay with frequent potsherds, fragments of glass, iron, bone, construction material and river pebbles. Most of the diagnostic materials, such as South Gaulish and some Hispanic *Terra Sigillata*, can be dated to the second half of the first century (mainly Flavian period) and the very early second century, but some of the finds cover also the third, fourth and fifth centuries. The average depth of the foundation SU 66 of the wall SU 71 is about 0.60m. It protrudes on average 0.15m from the facing line of the wall. There were no indications of internal plastering with mortar or of calcareous incrustations due to its long use. At the eastern corner of the walls SU 60/71, where the channel bends to 90° N, a few granite blocks appeared inside the channel; as they are placed somewhat higher (+/- 0.15m) than the bottom of the sewer, they could be interpreted as a reinforcement of the corner of the foundation of wall SU 66/71. In the very corner of the sewer, the only structural element of the sewer flooring was found: a

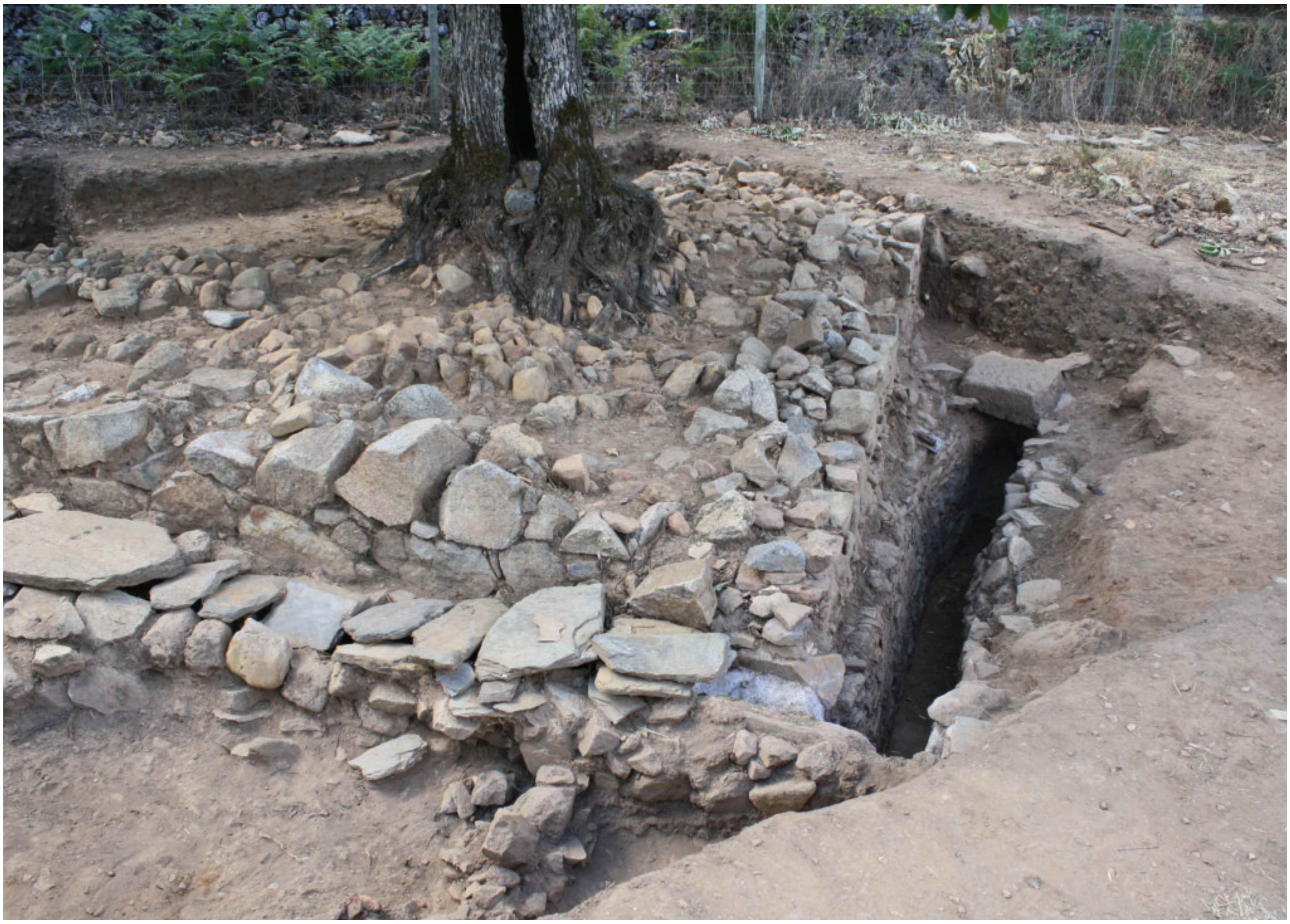

Fig. 63 *Ammaia,* sector B – Baths. The channel SE of the *natatio* retaining wall.

series of three *tegulae* (Fig. 64). This roof tiles were positioned sloping slightly down towards the east and were made of strongly over-fired clay.

At this stage of research, the situation of this large space (*amb*. D) remains unexplained. The archaeologists who carried out the "old" excavations proposed that the original ground levels (for instance, those connected with the foundations of the walls SU 15 and SU 16), had completely disappeared and no any trace of them seemed to have been recognized during the former excavation campaigns. This idea has now changed and some indication of the original arrangement of this area has been painstakingly recovered. For instance, a fragment of a floor or – better – a preparatory layer for a flooring level, SU 216, found in the NE corner of the extension of the excavation area, investigated during the last campaign (2011), can be attributed to a first phase, and seems to be in connection with walls SUs 44/15, 87 = 88 and 135[5]. Moreover, N of the tree, excavations reached the top of the natural soil, which could be described as a very

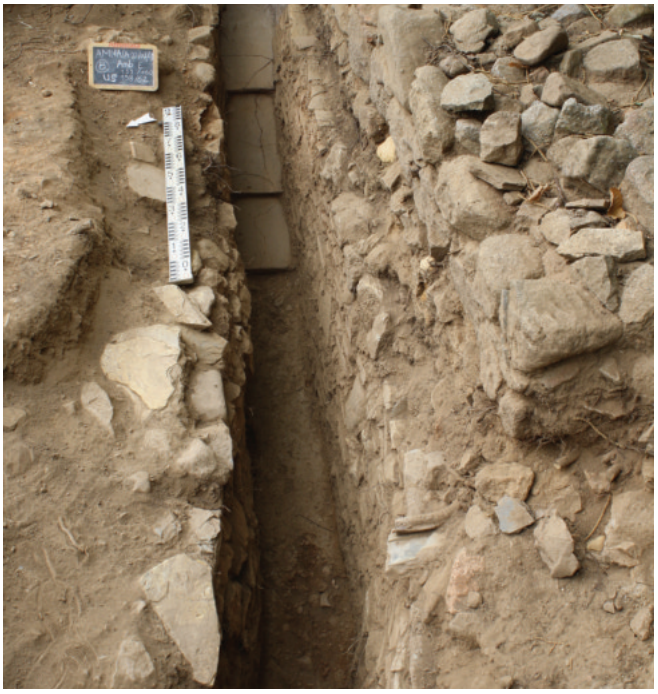

Fig. 64 *Ammaia*, sector B – Baths. View from NW of the emptied sewer on the NE side of the *natatio* with partial *tegula*-flooring.

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[5] For the stratigraphic relationships of SU 216 with the other layers of the *amb*. D, see *infra*.

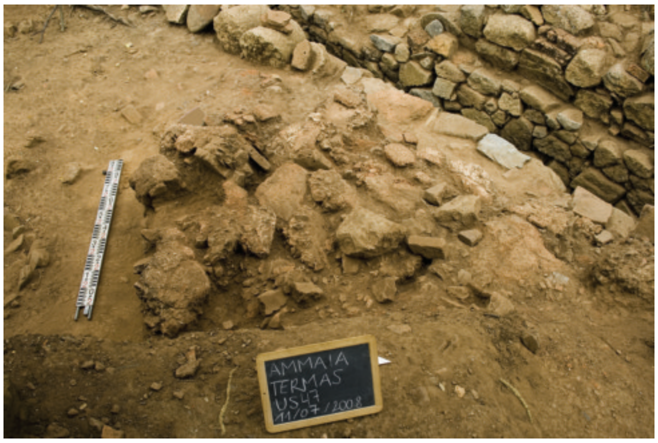

Fig. 65 *Ammaia*, sector B – Baths. View from NE of the destruction layer SU 47 (photo D. Taelman).

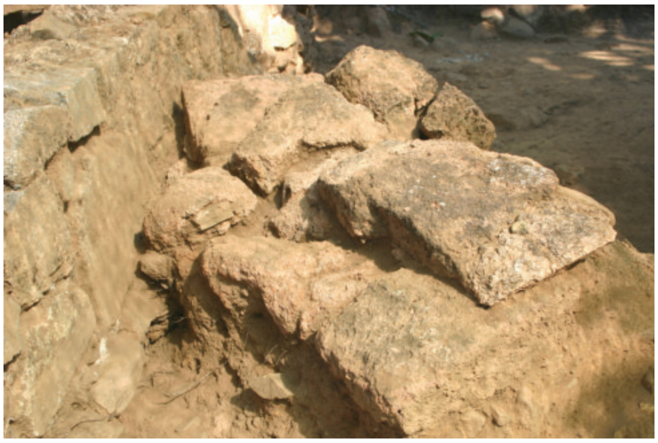

Fig. 66 *Ammaia*, sector B – Baths. The blocks of mudbrick found in *amb*. D, under the bench between squares 1310 and 1209 (SU 1).

compact colluvial stratum of orange loamy clay with many fragments of whitish-yellow sandstone. Near the S section of this northern part of *amb*. D a small part of the underlying lowest floor level, a compact layer of whitish mortar (SU 101), was also preserved. This layer lay directly on top of a thin foundation (*rudus*) of river pebbles (SU 102), found over almost the whole sector N of the chestnut tree. It lies on top of the natural soil and is only disturbed, near the *natatio*, by some ill-preserved remains (a few parallel-lined pieces of stone) of a small sewer (SU 99). A possible cover plate in slate belonging to this narrow sewer is visible in the eastern profile of this sector of *amb*. D. This sewer structure is cut by the *natatio* and its adjoining large sewer, and might well, therefore, belong to phase IIIa of the site (*infra*).

Hypothetically, if we could exclude that the large heap of unexcavated debris (SU 47, Fig. 65, see Fig. 54) was brought here from elsewhere, we could state that this drainage system could have been connected with a *hypocaustum* floor and that this space was paved with a thick layer of "*cocciopesto*" and elevated with *suspensurae* traditionally built with small bricks (*bessales*), while the lowest flooring was constituted by a layer of mortar on a *rudus* of pebbles (SUs 101 and 102). The other possible explanation connects the rubble layer SU 47 with an intentional filling of the space now defined *amb*. D with soil and rubble to raise its level.

Whatever the case, the *amb*. D would have suffered further robbing, possibly during the abandonment of the whole bath complex. During this destruction, part of the channel and its slate slabs (SU 38 = 42), which was still preserved in square 1310 (old excavations) before it was removed in the course of the 2011 campaign[6], would have been removed. What was lost, however, as a consequence of the robbing and of the mis-interpretation during the "old excavations", is the stratigraphy into which this channel was cut and the walls of the channel itself. A portion of the stratigraphy was preserved in the baulk between squares 1310 and 1209. Here, we started to take away the higher SU 1, a heap of mudbricks and floor fragments leaning against wall SU 15 (Fig. 66). Part of these mudbricks preserved clear traces of a polished surface. The presence of this kind of material is very peculiar (and very abundant): several of these bricks had been reused also in the "rearrangement" of the side walls of channel SU 66/67. Their original use is still unknown: mudbrick could also be used in upper parts of walls or as flooring material.

As anticipated (*supra*, p. 73), in the zones W and S of the chestnut tree the excavations revealed elements of both phases of the building activity and use of this sector. Also here, the excavations reached the natural soil of this *amb*. D. This is certainly the case around the remains of a large granite structure (SUs 56-57 and SU 59), possibly a monumental entrance and staircase giving access to the area SW of wall 44 (*amb. D*) before the level was raised (Fig. 67). After removing what was left of some destroyed mudbrick wall fragments (SUs 1 and 2) and remains of a whitish mortar of a possible foundation layer for the staircase (SU 64), we excavated around both structures SU 56-57 and SU 59.

Placed into the sterile, yellowish, stony rich colluvium layer, were three levels of large well-shaped granite blocks. They were partly joint (SU 57), partly built (SU 59) against the wall SU 44 and could well have been built contemporaneously with the latter. In the foundation pit of SU 56-57, the yellow colluvium is mixed with greyish soil and some small pottery fragments (SU 157). In the southern part of *amb*. D, we note the important discovery of two almost circular layers of small uncut stones, possibly to be interpreted as foundations for large columns or pillars (SUs 41 and 172, Fig. 68). It is remarkable that these structures are quite similar to the one excavated in earlier campaigns (SU 45,

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[6] Other "layers of destruction", reconnected to robbing activities have been identified in the south-western part of *amb*. D, such as the SU 209; the presence of a de-contextualised large granite block suggests the possible main target of these recovering activities.

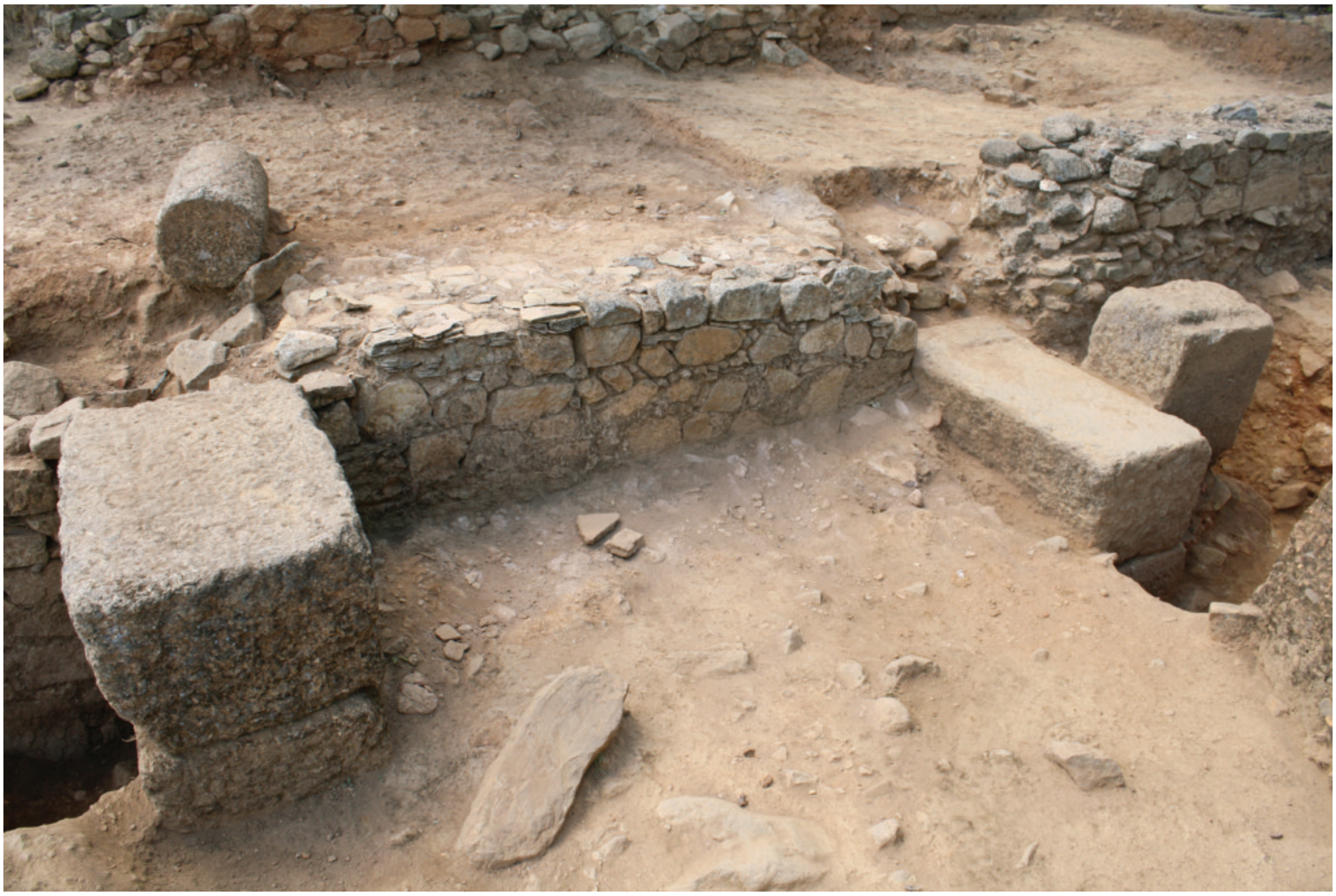

Fig. 67 *Ammaia*, sector B – Baths. View from NE on the remains of a monumental doorway and staircase (?) linking *amb.* C and *amb.* D. Big granite blocks are preserved on the right (SUs 56-57) and left (SU 59) sides.

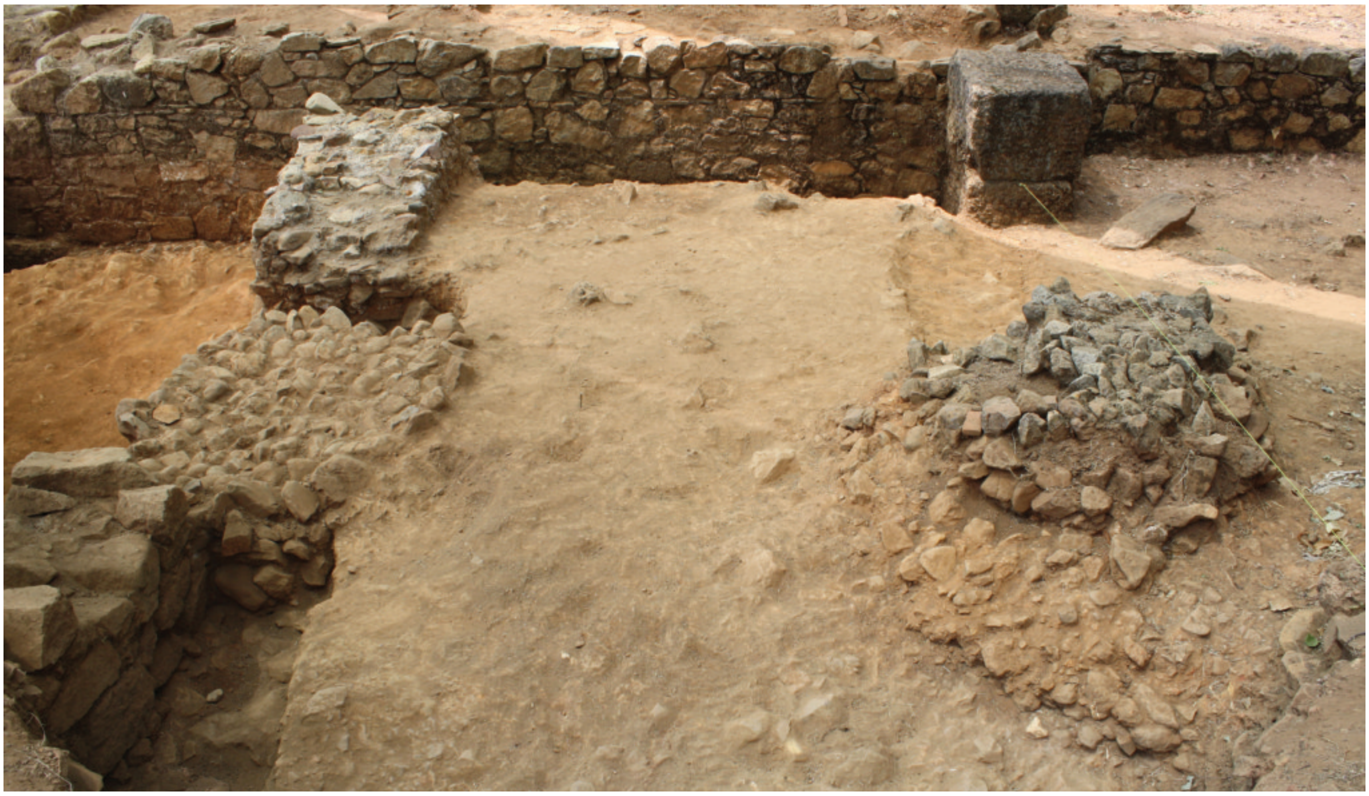

Fig. 68 *Ammaia*, sector B – Baths. View from NE on two foundations made with uncut stones of columns or pillars SUs 41 and 172 in *amb.* D.

supra). In SU 41, this foundation was somewhat better preserved, as above the layer of dry stone other layers of stone mixed with mortar were present. These three circular structures, identified as foundations for pillars or large columns, were more or less well aligned, parallel with wall SU 15 - 44. We cannot exclude the possibility that a fourth of such structures might be found underneath the as-yet-unexcavated part of the site, near the chestnut tree. These arrangements for pillars or columns might be considered part of the most recent Roman architectural transformation of the bath building. This statement is based on the fact that they cut layers of probable Claudio-Neronian date (Phases I or II), and on the fact that the finds from the fill (SU 215) of the foundation trench (SU 217) of structure SU 172 fix the general chronology in the third century AD, when the last remodelling of this space outside wall SU 44 took place.

Some interesting data for the understanding of the sequence of events came from the excavation of trench SU 237, filled by layers 113 and 112, which was already excavated in 2009. This trench, initially considered as being related to the foundation trench of wall SU 44, was later attributed to some spoliation activities, which would have disturbed the stratigraphic relationship between walls SU 44 and 35 and 103. The finds from SUs 112 and 113 give as *terminus post quem* the end of the second – beginning of the third century AD.

The effective foundation trench of wall 44, the SUs 214 and 237, was identified at a much lower level. It was covered by a thick layer (SU 198 = 202) composed of a very compact yellowish clay, with fragments of building materials, a fragment of bronze or copper and a block of limestone. It could be observed that SU 198 = 202 covered the last fill SU 195 of the foundation trench SU 226, made to build the wall SU 44, a foundation structure consisting of a layer of concrete composed by mortar mixed with stones of medium and small dimensions. Therefore, SU 198 is to be considered as one of the earliest layers related to the use of the space delimited by wall 44, as it covers the fill of its foundation trench. This level probably went out of use when the structures SUs 173 and 172 were built, as it is cut by their foundation trenches. It should be noted that SU 228, which is cut by the foundation trenches of walls 44 and 135 and is completely devoid of finds, can be considered as the natural soil (elevation 539.71 > 540.05m). No dating materials were found into the foundation trench of the wall 44, but several finds come from the SU 198 = 202, and they all refer to Claudio-Neronian periods[7].

In the space delimited on the eastern side by the edge of the excavated area and walls 135 and 173, two layers were identified. The upper (SU 203) has been interpreted as an accumulation of debris, while SU 209 was probably the result of robbing. It is characterised by the presence of a granite block (clearly decontextualized) and of many angular stones of small and medium size.

Ambiente E

The upper layers of this area immediately NE of the *natatio* were much disturbed by a large recent pit (SU 134, also SUs 116–121), possibly related to the roots of the nearby chestnut tree. Here, other sub-recent features (SU 63 and SU 125) can also be related to the robbing of the *natatio* wall SU 61. Underneath these disturbed layers, a Roman-period destruction layer was identified. This sediment (SU 98) contained, apart from a large concentration of fragments of fine and coarse ware pottery, mostly large rough stones and also regularly cut blocks and other fragments of ceramic building material (*opus spicatum* blocks, bricks, etc.), a concentration of charcoal and small fragments of mudbrick. The ceramic material covers the whole Imperial period but a sherd of Phocaean Red pottery can be dated in the second half of the fifth century. This layer and its date could possibly be connected with the ultimate abandonment of this structure.

In this sector, the fill of channel SU 67 was excavated. After taking the bend at right angle around the *natatio*, the channel, here composed by the SUs 158 and 160, neatly follows the external border of the pool in a north-westerly direction, only to start deviating from it near the northern edge of our excavation area. Also in this area, the channel was capped mainly with slate slabs of medium/large dimensions, while an *in situ* squared block of granite shows that also more robust blocks were used as covers (SU 117) (Fig. 69). After finely removing and sieving the contents of this channel (SU 152), we could observe its internal construction, which in this area seems to be better preserved and more original than S of the *natatio*. The average depth of the preserved sewer walls was *c.* 0.75m, sloping slightly down in northern direction. The walls were essentially built with broken pieces of brick and tile and flat slabs of limestone. The channel walls were partially covered on the inner side with (hydraulic?) mortar. The floor was not uniform and consisted of three large *tegulae* (SE part) placed overlapping in a quite steep slope downwards to the NW, then the rest of the floor was compact mortar with a smoother inclination to the NW. The fill of greyish, slightly organic earth contained many small fragments of pottery, glass etc. Most of the diagnostic pottery (*Terra Sigillata*, thin-walled pottery and lamps) points at the second half of the first century AD and early second century as the main period of use, but later finds suggest a final abandonment only in the fifth century.

C.C.

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[7] Because the stratigraphic relationships were not fully understood, José Carlos Quaresma has published a preliminary interpretation of the stratigraphies of the *Ammaia*'s Baths with relative chronology that needs to be rejected.

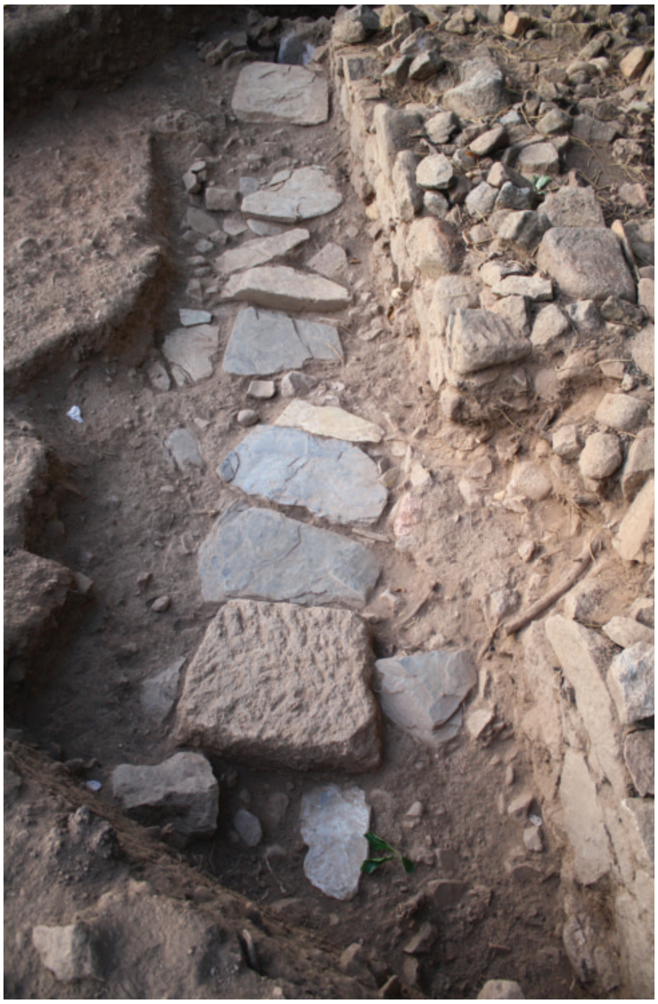

Fig. 69 *Ammaia*, sector B – Baths. View from NW of the cover (SU 67) of the sewer along the north-eastern side of the *natatio*.

b The extension sector

To understand the plan of the complex better, to have a better view of the effect that the construction of the thermal rooms had on pre-existing buildings, to collect more data about the chronology of these processes and to verify the features interpreted from the geophysical survey conducted in the vast area SW of the baths, we decided to open a new excavation area south-west of *amb*. C during the 2011 season. The new area, of about 30m^2, was first exposed by a superficial cleaning of the surface; under very few centimetres of agricultural humus, the surface of several connecting walls was revealed. Therefore, it has been possible to distinguish new sectors (H and I) and to draw a first plan of the extensions of the important wall structures SU 35 and SU 44 in this area of the bath building (Fig. 70).

The summer drought and the presence of many roots and vegetation made the excavations in these sectors especially difficult. In general, these structures appear to delimit quite large spaces that respect perfectly the orientation of the already-known structures. Even though the superficial layers contained few archaeological finds, and no precise dating elements can be presented at this stage, our opinion is that the walls connected with SU 44, have to be considered as part of the Roman-period project to create a large platform, in the location where earlier buildings (whose original use cannot at the moment be connected with a thermal use) were originally built.

In the eastern extension of the excavated area, a series of interconnected fills was found (SUs 196, 208, 171 = 197, 199 and 213), which fill the cut SU 214. This trench runs with a SW-NE orientation, parallel to wall SU 135. Its maximum dimensions are 1.20 by 1m, and the depth can be estimated in *c*. 0.30m. The different fills of this narrow trench are characterized by the abundance of ceramic building material, mainly small and often intact bricks (pieces of *opus spicatum)*, in a matrix of compressed sediment. This cut SU 214 intruded through SU 198, part of SU 228 and SU 238. The building materials found in its fill are probably to be connected with the earliest phases of occupation of the area.

Ambiente G

In this area, SW of the early building of *amb*. B, only cleaning operations were conducted, as well as preparations for manual excavation. The sterile and homogenous upper fill is equal to that observed in *amb*. C. Time restraints and the very hard and compact fill encountered here prevented further excavation of this area during this last campaign.

Ambiente H

The extension of the excavated area towards the SE allowed the identification of this other area, *amb*. H, which could only be partly excavated. It is delimited at the NE by wall SU 135, and by SU 87/88 at the NW, while the eastern and southern borders are marked by the limits of the excavated area. Here the natural soil was reached at the elevation of 539.67–540.02m a.m.s.l. (SU 184 = 220). It was covered by SU 194, which was considered as a levelling layer for the creation of a road-deck, related to the use of wall 87 = 88, on the outside of the block, along the *decumanus*. SU 194 covered its foundation SU 185, and SU 218 (which corresponds to SU 183 from the 2009 season), filled the foundation trench SU 219. It is likely that in this area H we encountered the much-disturbed remains of the street which once bordered the bath building on its south-eastern side (Fig. 71). Due to intensive robbing activities of the street paving, this structure is now difficult to interpret, and only a wider excavation of this zone would possibly allow a better understanding of the road stratigraphy. In this area were also found several remains of late antique or early medieval

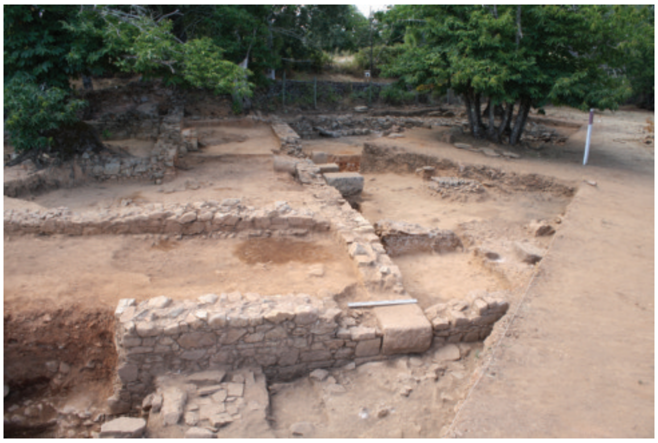

Fig. 70 *Ammaia*, sector B – Baths. View from SE on the extension sector.

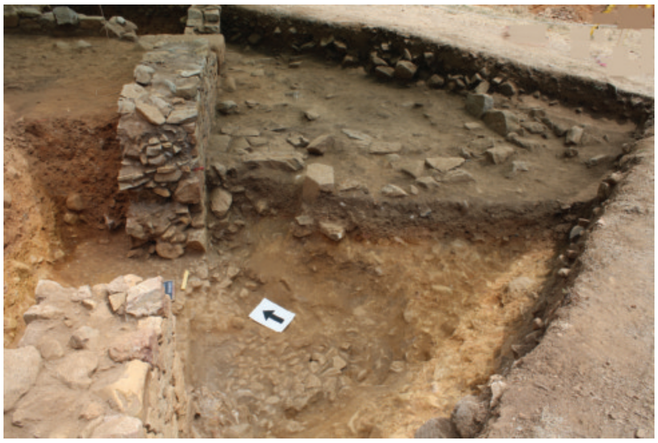

Fig. 71 *Ammaia*, sector B – Baths. View from SW on the spoliation layer of the road-deck on top of the colluvium in *amb*. H.

levels of occupation, such as a possible destruction level with some remains of tiles (SU 120), atop a burned layer (SU 124) which itself overlay a fine surface of battered earth and gravel (SU 179). These structures might be connected with the last surface of the street, or are the result of squatter occupation after the abandonment of its function as passageway.

Ambiente I

The *amb*. I can be described as a long rectangular corridor, delimited by the two parallel walls SU 35 and 87 = 88, which run perfectly NE-SW and are perpendicularly crossed by wall SU 44. In this sector, the stratigraphy seems to be heavily affected by later intrusions, mainly interpreted as robbing pits to collect building material or post-depositional events connected to vegetation (like tree pits). Therefore, fieldwork has been primarily targeted to understand how the robbing occurred.

Part of these disturbances, such as a large pit with loose fill of mostly stone rubble (SU 106) seem very recent. The pit cuts through wall SU 87 and might well be connected with modern looting activity (Fig. 72). It cuts into an older pit with combusted roots, the content of which could hypothetically date to Late Antiquity (SU 151) and also into a small preserved compacted surface level (SU 118) visible near the edge of our excavation trench. As result of the disturbance of the stratigraphic context by the large pit, walls SU 87 and SU 88, were first thought to be two separate structures, while only at the end of the season was it proved that their foundation was only one structure (SU 185), and they have now been matched as being one wall (therefore, SU 87 = 88). The observed robbing activity was probably aimed at the recovery of large granite building blocks which were originally inserted in the wall as part of a kind of *opus africanum* building technique (*infra*).

The excavation of the modern pit has provided a good stratigraphic section of the accumulation of sediment, probably resulting from a kind of terracing, performed in the area (*amb*. I) when wall structure SU 87 - 88 was erected. It is clear that the ground level was raised here by more than 0.80m when phase IIa (*infra*) construction began. The fill consists essentially of sterile orange to brown soil mixed with cobbles and unworked stone fragments, all material of colluvial origin, practically devoid of artefacts. Still, this substantial fill, considering the fact that it functioned as a terrace to install wall 35, must be considered intentional. In this deposit, we distinguished layers 204, 205 and 207, all affected by the cutting SU 211 near wall 87 = 88. The latter is undoubtedly the most important feature in this area. This well-built structure, with a preserve height of 0.90m, was constructed with a well-finished facing of irregularly shaped to slightly rectangular stones laid in sub-horizontal layers. Most of these blocks were of granite, although the wall also contains a few pieces of brick and even one small fragment of marble. The core of the wall is held together by white-greyish to pinkish and very loose mortar. The wall is joined to SU 44 by way of a large rectangular block of granite (Fig. 73). The emptying of the large robbing pit SU 211 served to reveal the upper part of the foundation SU 185, which protrudes about 0.20m from each of the two sides of the wall (see Fig. 72). The foundation was built by digging a trench (SU 219) and filling it with concrete, but the top part of the foundation trench was filled with dark, brownish sandy soil, containing some finds and labeled as SU 218 (see *supra, amb*. H). At the end of the campaign, the revision of the sequence brought us to the conclusion that some layers individuated in *amb*. H and I could be connected and considered as equal. Such is the case of SUs 183 and 218; 155 and 194; 211/181/184 and 210/ 220.

F.V.

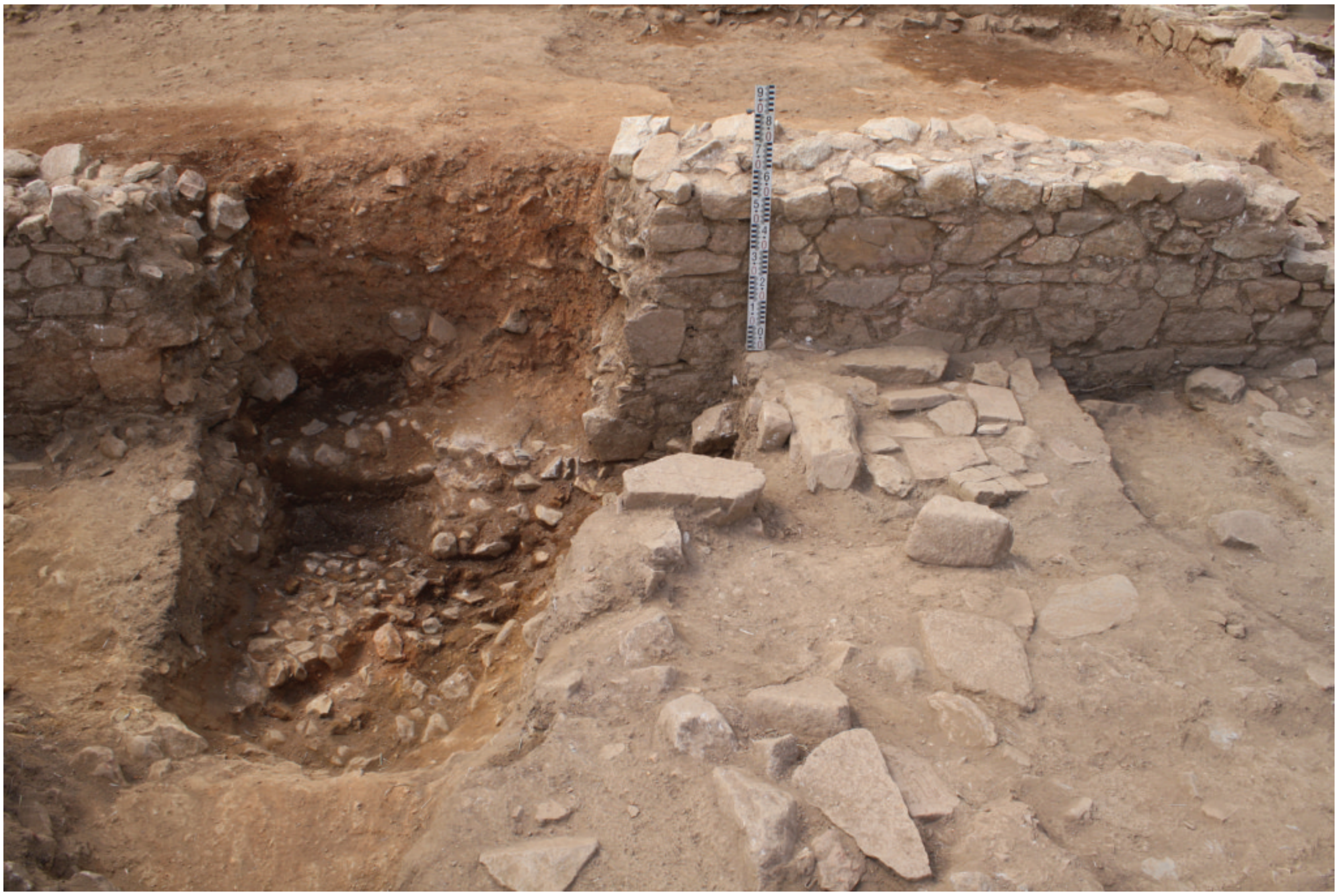

Fig. 72 *Ammaia*, sector B – Baths. View on the modern spoliation pit destroying part of the wall 87 = 88.

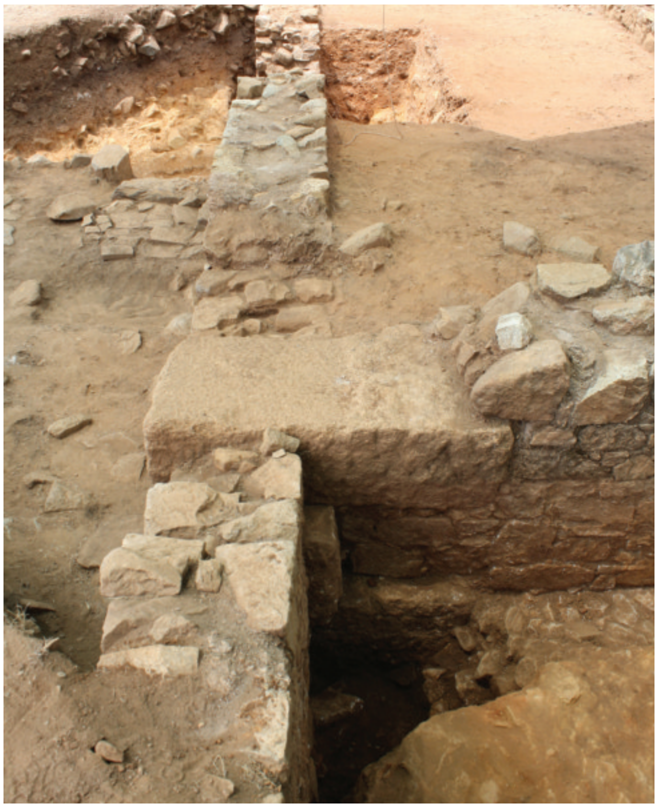

Fig. 73 *Ammaia*, sector B – Baths. View from NE on the "junction" between walls 87 = 88, 44 and 135.

c The construction history of part of Block XXVI: the stratigraphic sequence

Phase I – first structural phase with non-thermal (?) buildings (amb. B)

As anticipated, the new interpretation of the stratigraphic sequence encouraged us to consider the wall SU 44 as built before the walls SUs 35 and 103. This is likely together with the walls SUs 87 = 88 and 135, in spite of the fact that at first it was thought that SU 44 cut wall SU 103, which therefore would have belonged to an earlier construction phase. In fact, the wall SU 35 appears to have been built as a deposit, serving to raise the ground level, that would have been obtained with the construction of the walls 44/87 = 88/135.

We therefore have to imagine a first building phase where only the structures delimiting the *amb*. B and the wall SU 8 are present in the SW part of the block (see Fig. 56).

Only hypothetically, these structures could be related to other early-phase elements individuated in *amb*. D (such as the (preparatory) flooring layers SUs 101-102).

No evidence has been found to connect this building to a thermal use.

The only reliable element to propose an absolute chronology is the technical analysis of the building technique of the wall SU 8 (*infra*, II.5 and V.1), which places this wall among the earliest structures yet found in *Ammaia*. Therefore an initial Julio-Claudian date is the most probable.

Phase IIa – extension of the block

The construction of the huge platform, supported by the walls 44/87/88/135, possibly serving to level the slope and as a makeup for new buildings (*amb.* B/C), would have resulted in an extension of the limit of the *insula* on the SE side. Here, in fact, we have to remark that the regular grid of blocks which has been identified for the largest part of the intra-mural area presents an anomaly: the limit of what has been labelled as *insula* XXVI was expected to be in line with the wall 222 = 230, the line that is – according to this reconstruction – later followed by the walls SU 35 and 103. This alteration with respect to the original planning could be attributed to the fact that this block was chosen to include the town's main thermal complex.

The "break" of the wall SU 35 where it intersects with wall 44 should therefore be interpreted as arising from the search of building materials carried out already in antiquity; it seems that both sides of wall 44 were followed by narrow trenches, likely serving to locate the presence of the large blocks of granite. These were probably the target of the *fossores*, as was the case along wall SU 87 = 88, where a large pit SU 106/51 can clearly be interpreted as the result of the removal of one large granite block.

This presence of third-century material from SU 237/112/113 (on the north-western side of wall 44) confirms this interpretation, despite the fact that the stratigraphic relationship between walls 35 and 44 has been lost. In fact, SU 237/112/113 was cut into depositional layers accumulated against wall 44 (which was built, instead, above ground level when the floor level of the area was lower) and is not directly related to the foundation trench of wall 44 (SU 226/195).

In this interpretation of events, the chronology of the construction of walls 44, 87 = 88 and 135? is arrived at by dating the finds within their foundation trenches SUs 226 (related to SU 44), 214 (related to SU 135) and 219 (related to SU 87 = 88) and by the very poor finds of the back-fill of the platform, corresponding to SU 204/205/207.

The construction of walls 44 and 87 = 88 would have been followed soon by the earth fill of the "terrace", the terraced platform over the N of the *decumanus* "L", where the walls SU 9, 31 and 32 would have been built (phase II). At the same time, the use of the large room in front of wall 44 would be represented by flooring levels like SU 216.

The walls 87 = 88 and 135, at this stage, would have marked the limit of the block on the south-eastern edge.

The chronology of this phase is given by the material collected in the foundation trenches, which fix to the first half of the first century AD the *terminus post quem*.

Phase IIb – construction of thermal installations in amb. A

Soon after the construction of the large platform, the construction of the thermal infrastructures of *amb*. A must have followed. This construction required the levelling of the pre-existing walls, partially reused to build the *piscina* and the back-filling of the surrounding spaces up to the level of the capping slabs of the sewer 53/6.

We do not know how much time elapsed between the construction of wall 44/15/87 = 88 and the building of *amb*. A, but we can say definitively that the top level of the backfill must have reached at least the top level of wall SU 17/21, as it appears to have been partially built in a trench.

Phase III – first raising of the level of amb. D

As stated above (Phase I), the space in front of wall 44 (*amb*. D) was probably originally used at the level of the lowest detected flooring levels SUs 101-102. We hypothesize that the ground level was already raised here during phase III and that in this backfill the small sewer SU 99 was built, partially destroying this floor level. It is also possible that the level was raised by the construction of a *hypocaustum*, which would have been destroyed at the time of the construction of the *natatio*, or at the latest contemporaneously with the construction of sewer SU 67.

Phase IVa – construction of the natatio

Sewer SU 99 is cut by the *natatio* and its adjoining large sewer, and is therefore clearly put out of use by the time the pool was constructed (or, as stated above, at the latest by the construction of the sewer). We have no data to correlate the sector of the *hypocaustum* with the area in front of wall 15/44, but it is possible that sewer 38 = 42 was functioning (as part of the water-drainage system of the bath *amb*. A in connection with the channel SU 6/53?) in phase with it.

At this stage, we should therefore imagine a ground level raised to the level of the cover of the sewer, connecting the area of the pool to the area of the bath *amb*. A.

The phasing should not be considered far removed from that of the building of *amb*. A, considering that the drainage system seems to have been part of the same planning.

Phase IVb and IVc? Remodelling of amb. A and D.

Unfortunately we cannot establish the stratigraphic relationship the south-western and north-eastern sectors of the excavated area, but we know that the bath *amb*. A went through at least two important restyling phases: first, the construction of the bench SU 22 and second, the rebuilding of the north-western side and the insertion of the flight of steps SU 27 above the second layer of plaster and veneer stones. In the *amb*. D the floor level is raised at least until the foundation of SU 222 = 230.

Phase V – remodelling of amb. D

We can only tentatively place the construction of the wall 173 in this phase because foundation trench 230 (which was filled by the SU 229) cut layers in phase with SU 198—i.e., deposits related to the first phase of occupation of the site (Claudio–Neronian phase).

Sewer 38/42 was then cut by the construction of foundation 41, while the similar structure 172 cut wall 173. As we will discuss more in detail later (section II.4), we therefore imagine a space where there was a row of pillars or columns parallel to wall 44/15 during this last (?) phase of use of the thermal complex.

In this phase, we would also place the construction of sewer 65/67, which we still think was linked to this monumental complex, and whose fill would therefore date the last thermal use of the area.

The chronology, based on the finds from the foundation trench of structure 172, should be fixed somewhere in the course of the third century.

Phase VI – abandonment and reuse

The abandonment of the bath-house, or of the structures that were served by sewer 67/68, is dated by the most recent materials that clog the sewer: glass fragments of Isings type 116 and some lamps (see chapter II.6, nos. 146, 148-180) from the second half of the fifth century.

The several robbing events, during which the precious construction and veneer stones used in the complex were removed, continued until very recently, as proved by the find of a post-medieval glazed-ware fragment from the robber trench SU 106/151.

Phase VII – robbing

The several robbing events, during which the precious construction and veneer stones used in the complex were removed, continued until very recently, as proved by the find of a post-medieval glazed-ware fragment from the robber trench SU 106/151.

II.3 COMPLETING THE PLAN AND CONTEXT OF THE BATHS THROUGH NON-INVASIVE SURVEY

Frank Vermeulen

From 2008 onwards, and spread over several campaigns, a major effort of non-invasive field survey was achieved to understand the full topography of the site of the Roman Baths at *Ammaia*. This implied several campaigns of topographic and geophysical survey over the whole area of the presumed bathhouse and its *insula* (Block XXVI) as part of an intensive investigation of the Forum area of the city. This work was evidently much hindered by the fact that part of the site of the Baths was destroyed during the 1920s when the road from Marvão to Portalegre (N359) was constructed, cutting through what is now known as the western part of this building complex. However, we are now able to obtain a relatively broad understanding of the basic plan of this monumental complex through careful analysis and recording of several extant or detectable wall structures near both edges of the street, by linking these remains to the results of detailed GPR, electric resistivity and magnetic surveys of the remaining agricultural space in this area of the town, and by putting all of these data into the context and phasing obtained from the excavated evidence.

While we will not detail here the techniques and methodologies of these surveys, which have been meticulously discussed in earlier publications by our team (Verdonck and Taelman 2012; Verhegge 2012; see also: Corsi, Johnson and Vermeulen 2012; Vermeulen, Corsi and De Dapper 2012), we can synthesize the main results here concerning the plan of the bathhouse as it can now be hypothetically reconstructed.

In the field immediately W of N359, two *opus caementicium* cores of monumental wall fragments are today still visible above ground level. One, with a length of some 8m and preserved height of almost 4.5m has a NW-SE orientation (Figs. 74; 75, no. 2). Perpendicular to it, and barely visible above the ground, a shorter (but clearly connected) wall section can be observed over a distance of *c*. 4m (Fig. 75, no. 1). Through analysis of the GPR results, we are now almost certain that both walls belong to the western part of the Bath complex (Verdonck and Taelman 2012). In fact, this prospection method, which also allowed for the detection of certain preserved lower parts of walls now lying buried under the road surface, clearly revealed the main wall structures of this partly disturbed western half of the bathhouse. They are the scanty remains of the outer wall of the NW side of the building (bordering the so-called *decumanus* which separates the Baths from the Forum basilica) and a series of internal walls, some of which neatly incorporate the two remaining wall segments visible above ground. During this road survey in 2011, several elements were also discovered which link up with the excavated part of the *natatio* lying east of the road: notably, its western corner and walls (which show in the GPR results as a reflective area), which can reasonably be considered as the floor of the pool. This correlation allowed us to map the full structure, which has inner dimensions of *c.* 9.8 by 9.3m. The surrounding platform, presumably a porticoed walkway measures *c.* 2.8m (NW) and *c.* 2.25m (SW) wide in the GPR results, and can now be linked with the excavated remains, which measure 2.2m (SE) and 1.95m (NE) wide. The whole space of the *natatio* complex forms a perfect square with 14.4 m sides.

Furthermore, the integration of the three geophysical methods with the data from the excavations allowed for reasonably satisfactory mapping of the south-eastern and north-eastern parts of this bathhouse (Verhegge 2012). Wall segments link up *quasi* perfectly between non-invasive data and excavated information, providing at the same time a good ground-truthing of our methods. These south-eastern and north-eastern edges of the Bath complex seem therefore relatively certain, allowing us to estimate the extent of the rectangular complex at approximately 1750m² (39 by 45m). Many linear wall structures can be seen in the resistivity and magnetometry results within the remainder of the space occupied by this *insula*, directly NE of the bathhouse (Fig 76). They are clearly part of a large, rectangular, symmetrical and axial house of some 43 by 30m (circa 1290m²) of the *domus*-type with *peristylium*. The house profited even more from a prime position in the centre of town as it was orientated with its eastern long side and entrance towards the *cardo maximus*. Here it was probably bordered by a series of *tabernae* opening up to this main street (Corsi 2012a: 142, 147-148).

Significantly, it is also possible to have a better understanding of the water-provisioning system of the Baths through analysis of the intensive geophysical surveys and related topographical work. As synthesized in Vermeulen, Corsi and Meyer 2012, the discovery of some granite U-shaped blocks, covered with schist slabs, reported in an area SW of the Forum complex (*Relatorio* 1998–2002: 36–37), triggered the idea of a large aqueduct providing the town centre from the hills west of the ancient town. Subse-

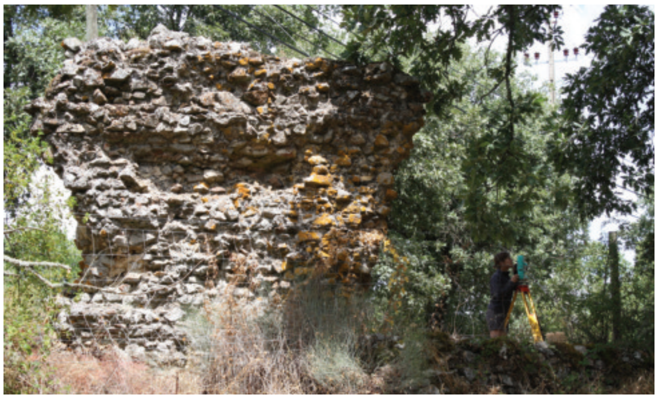

Fig. 74 Above ground remains of the wall of the Baths.

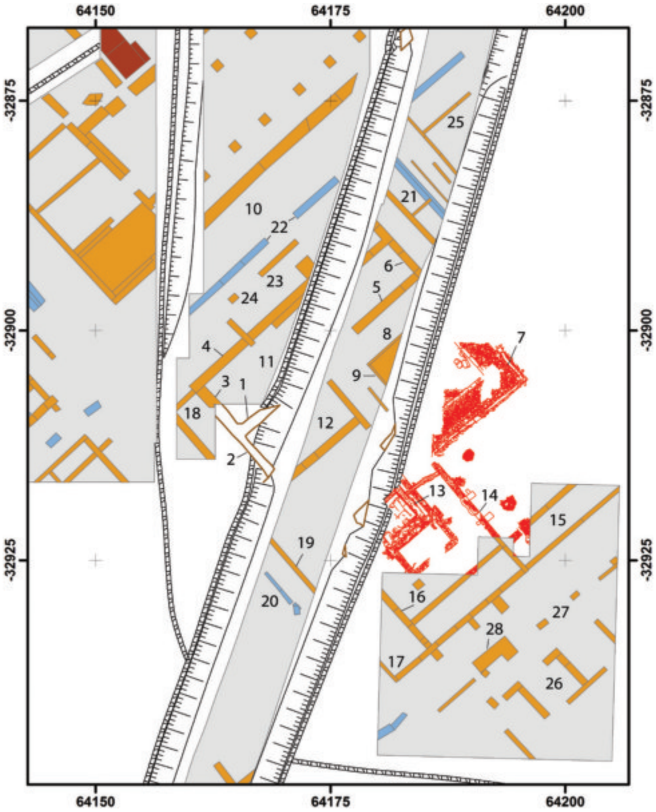

Fig. 75 Vectorised interpretation (yellow: walls and foundations; blue: aqueduct and sewers) of the GPR survey confronted to the excavated remains of the Baths (red) before the campaign 2009 (elaboration L. Verdonck).

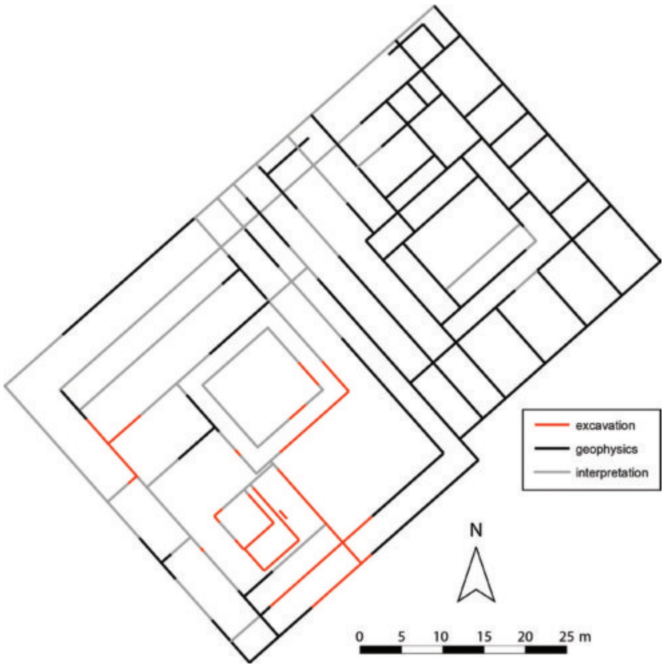

Fig. 76 First interpretation of the structures in Block XXVI shared by the Baths (left) and a large *domus* (right). This interpretation brings together data from the excavations and different geophysical prospections (elaboration D. Taelman).

quent geo-archaeological surveys helped to locate precisely the trace of the aqueduct from its source to the town wall (Vermeulen *et al.* 2005; Vermeulen and Taelman 2010), while the geophysical survey, in particular the magnetometry and GPR, revealed the last section linking the extra-mural aqueduct and main *specus* to the bathhouse (Vermeulen, Corsi and Meyer 2012). Once inside the city walls, this *specus* exactly follows the street trajectory of the *decumanus maximus* until it reaches the southern angle of the Forum. Certain geophysical data, in particular those from the GPR survey, suggest that from this node under the street crossroads (maybe the location of a small distribution tower) the main aqueduct splits into several conduits, the principal destinations being the Forum square (in particular the water basins near the temple) and the adjoining Baths. At this central town location, fresh water had descended some 30m from its source area about 1.5km W of the urban core.

II.4 COMPARATIVE RESEARCH, INTERPRETATION AND VOLUMETRIC RECONSTRUCTION

Cristina Corsi

a Understanding the complex: comparative case studies

From the review of the excavation data presented above and from the questions that we had to leave unsolved, it is clear that the framing of the Baths of *Ammaia* into a general typology is seriously hindered by the problematic definition of the phases and by the too-limited extension of the excavated areas. The reconstruction of the general plan of the *insula* achieved through geophysical survey only partially overcomes the lack of detailed information (e.g. the function of the rooms and how they connected) and the absence of stratigraphic information. What can be said on the basis of the interpretation of the results of the GPR and magnetic survey is flattened in the two-dimensional view, and would be misleading if one were to assume that the plan that we reconstructed is synchronic.

Notwithstanding these limitations, it is clear that the thermal complex of *Ammaia* had a relatively compact, almost square, plan, which is very similar to the *Termas da Muralha* of *Conimbriga*. Although this public establishment was inserted among the area occupied by houses, it was also parallel to the Flavian forum (Reis 2004: 63–66).

The presence of elongated narrow rooms all along the perimeter of the building, and in some parts of the building doubled in two parallel rows, in the reconstructed plan of the Baths are of particular note (see Fig. 76). These corridor-like halls may have worked as "disengagement" spaces or transitional areas, or in some cases as service rooms. Indeed, the two elongated rooms positioned at the NE-SE corner of the block have been interpreted as the two wings of an angular portico bordering the open yard of the *palestra* and swimming pool, while the others could effectively be interpreted as passageways or circulation spaces. In this case, we could not exclude the possibility that some of these long and narrow rooms opened like porticoes onto the facing streets, particularly if we take into account that the delimiting streets of this block on the N corner would have been among the most frequented avenues in town, accentuated by their proximity to the Forum.

Not all the walls that have been hypothesized in the initial integrated reconstruction (Verdonck and Taelman 2012) need be present, however. In the other possible reconstruction that we present here (Fig. 77), which also takes into account the latest excavation evidence, there are fewer dividing walls (and therefore wider rooms), and the walls most likely related to earlier phases, when the thermal use of the building is not proven, have been eliminated. The widest space, which we hypothesize as an open courtyard, is *amb*. D/E, with a total area of *c*. 280m². It would have held the *natatio*, the reconstructed external dimensions of which are 14.4m per side.

The most limiting factor for comprehensive interpretation and framing into comparative models is the lack of certainty about the location of furnace(s) and the original setting of the heating system, as the ash and the *suspensurae* partially excavated in *amb*. D and E were possibly out of their primary contexts. Surprisingly, the magnetic survey has not revealed the dipolar anomalies that usually signal the presence of buried ovens or furnaces (Johnson 2012). A location of the furnace(s) under the modern road surface and road-sides, where no such prospection method could be applied, might explain this absence.

Therefore, the only key elements which direct our discussion come from the room with bathtub (*amb.* A) and from the *natatio* (*amb*. F). The problem with *amb*. A is that we have no idea whether the bathtub was for cold, tepid or hot water. It is true that no connection with a *praefurnium* has been found, but we have to stress that, because of the destructive presence of the modern road, it was not possible to investigate the full extension of two of the four walls. Unfortunately, we cannot even indicate where the conduit for water-provisioning of the bath was positioned; the lead pipe that perforates the north-eastern wall of this bathtub (SU 8) is interpreted here as an "overflow drain"[1]. Nonetheless, taking into account the relatively wide dimensions of the bath (originally 4.20 by 4m), we can posit the interpretation of this structure as a small pool of cool water[2], which would be distinguished from the larger swimming-pool in *amb*. F (the *natatio*[3]) and eventually from another bath-tub of the *frigidarium*.

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[1] Lead pipes are normally used to provide water to buildings (Alba Calzado 2001a: 63–67), while to dispose of the water, other types of channels are more common. Still. in this case, it is only a segment of a *tubulus* that is used to "pierce" the wall, while the rest of the drainage system is composed of the channel SU 53 built with blocks, covered with the shale slabs SU 6.

[2] In Portuguese and Spanish this would be called *piscina*.

[3] "*Piscinas*" of large dimension are known in several towns in the Iberian Peninsula: the one of the *frigidarium* of the public baths of *Tarraco*, for instance, measuring 10 by 15m, is as large as a *natatio* (Díaz, García and Macias 2000: 163).

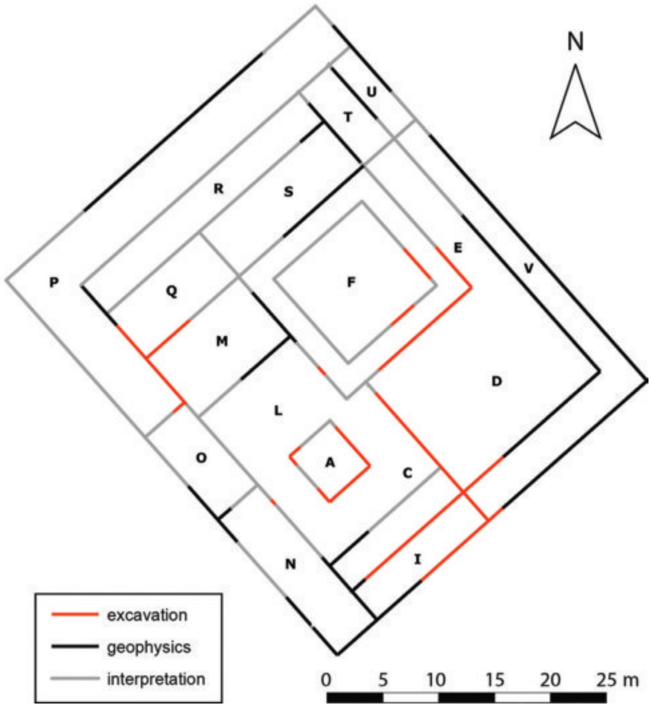

Fig. 77 New interpretation of the plan of the Baths, based on integration of geophysical survey interpretation and stratigraphical evidence (elaboration C. Corsi after Verdonck and Taelman 2012).

The closest comparison for such structures and combinations can be found in *Conimbriga*, in the public thermal complex of *Termas do Aqueduto*, built at the end of the second century, replaced an existing and larger complex (Reis 2004: 62-63). There, a *piscina* of *c.* 2.5 by 2.5m is located at one side of the spacious *frigidarium*, not far from the main entrance, while at the opposite side is a real *natatio*. In the same town, the *Termas da Muralha* have a large *natatio* (it measures 34.95m/35.50m on the E-W exterior side (33.90m interior), 21.70m/26.50m on the S-N exterior: Alarcão and Etienne 1977: 114), made accessible via a flight of steps (Reis 2004: 63–66). This complex is peculiar in the fact that one of the two *frigidaria* is much larger than the *natatio* itself. The comparison with the *Termas do Sul*, again in *Conimbriga*, shows that the first phase *natatio* of these public baths, measuring 10.25 by 10.25m and *c.* 1.60/1.65m deep, is comparable to that of *Ammaia*, and it would have been enlarged during the major Trajanic remodeling works, bringing its dimensions to 15.90 by 10.75m (Correia and Reis 2000; Reis 2004: 66–68).

The *natatio* is indeed a very peculiar element, which is present in several Lusitanian (e.g. Évora, end of first – beginning of the second century AD: Reis 2004: 29) and Hispanic (Ilerda, length 11.30m, depth 1m: Payà 2000) thermal complexes.

Many parallels can also be reported from the public baths of *Emporiae*, a complex which is also only partially understood through survey. It lies in the area of the forum and occupies a large proportion (approx. 1100m^2) of the *insula* (which measures 35 by 70m) above earlier structures whose connection and function is not clear. In some places, these baths are also associated with Augustan material (Aquilué *et al.* 2002: 245–247). Furthermore, like those at *Ammaia*, they have also been partially damaged by modern installations (a fort of the Spanish Civil War of 1936–39) and suffered heavy robbing after their abandonment, which occurred between the beginning of the third century and 275 AD, the year of the abandonment of the city (Aquilé *et al.* 2002: 244–245).

As anticipated, the proximity to the forum is another very common characteristic of public baths (Aquilé *et al.* 2002: 255), which in the *Hispaniae* finds confirmation in the examples of *Bracara Augusta* (Martins and Silva 2000), *Munigua* (Grünhagen and Hauschild 1977), *Complutum* (Rascón 2000),), and the *Termas del Foro* of *Clunia*, even if their public character is not definitely proved (Fernández Ochoa and García Entero 1999: 143), in addition to those examples that we have already mentioned.

Functional interpretation

On the basis of the data collected through survey and excavation, we propose that in *amb*. A, the *piscina* of the *frigidarium*, and, therefore, the surrounding hall (Fig. 77, L) has to be considered the *frigidarium* itself. If our interpretation of the stratigraphic sequence of the structures in *amb*. A and B is correct, the walls delimiting *amb.* B were already buried when the thermal use began. Still, as the bath is accessible from its northern side, it is possible that a delimiting wall separated *amb*. C/G from the rest of what has been labelled as *amb*. L. The space of *amb*. B/C/G could, therefore, be considered an *apodytherium*, but it is still more likely that the function of dressing hall was taken in by rooms N or O of Fig. 77, which were both accessible from the *decumanus*. Despite the lack of archaeological elements stressed above, the rooms M and Q could have served respectively as *tepidarium* and *frigidarium*, while the long corridor R would have functioned as service area, and would have likely held the furnace(s).

To propose a function for room S is too hazardous, given the lack of any supporting evidence, but considering the proximity of the *natatio* we should not exclude the possibility that there may have been a large tank of water here. Then, at least for one of the smallest rooms (Fig. 77, T-U), we can propose the location of a *latrina*. This interpretation of the sequence of rooms in the *Ammaia*'s Baths would finally comply with the general dispositions for the efficiency of this type of complex, with the warm sectors usually exposed to the W or S (Martins and Silva 2000: 78).

This proposal perfectly corresponds to the baths in the Andalusian town of *Baelo Claudia*, primarily if we mirror the plan of the public baths (Fernández Ochoa 2000: 62). On the other hand, most of the comparative cases, even if very similar in dimensions and spatial organization, are not fully appropriate because the complex at *Ammaia* lacks apsidal rooms. The latter is one of the most peculiar characteristics of this type of monuments, mostly when, like in *Ammaia*, the chronology of construction and use ranges from the second half of the first until the third/fourth century (*supra*).

Of course, as has been often remarked (e.g.: De Laine 1992: 257–275; Gros 1996: 388-389; Reis 2004: 17), thermal complexes can differ widely, and, therefore, it is not easy to place a certain establishment in a general typology. Nevertheless, although there remains uncertainty in the reconstruction of the whole plan, when referring to the typology by Krencker, the thermal complex of *Ammaia* undoubtedly has to be inserted in the "compact" model, even if it follows the "linear scheme". Possibly, it can be better described as an "angular" scheme, where the *natatio* is the element that closes the circuit (Reis 2004: 53–55). Indeed, the linear scheme with retrograde internal circulation, implying a return path taken by the bathers, is the most popular in the Iberian Peninsula (Fernández Ochoa *et al.* 1997; Fernández Ochoa 2000: 63–64; Payà 2000: 184 with more references)[4]. Evidently, it is the simplest, most economical, practical and functional method, and it is also the easiest to insert into the urban scheme. Within this group, the largest percentage belong to the linear-angular group because this type clearly better integrates into an *insula*. In many cases[5] this scheme is an evolution of the linear scheme, and often constitutes an expansion to the detriment of the adjacent buildings or even to neighboring blocks. Regarded within the context of the history of Roman urbanism, this phenomenon of expansion of bath complexes is commonly explained as meeting the growing demand for thermal services (Fernández Ochoa 2000: 65–66).

Volumetric reconstructions

Again, on the basis of what has been stated above, we must emphasize that the volumetric reconstruction that we propose is only a "working hypothesis", centered on the presence of the large square *natatio* in an open courtyard, for which the use as *palestra* is the most logical interpretation. The yard would have been surrounded by a portico, at least along the two eastern sides. In the last building phase, we hypothesized that the three concrete foundations (SUs 41, 48 and 172), with possibly a fourth located in the unexcavated area around the chestnut tree (*supra*), could have been used to support other pillars or columns, in this case generating a three-wing portico.

For most rooms of the complex, we imagined a classic roof cover and no concrete vaults, on the basis of the massive quantities of finds, of ceramic building material and on technical observations. Considering the thickness of the supporting walls, we reconstructed rooms with a maximum height of *c*. 4m.

The presence of marble veneer and the use of painted plaster for the walls is demonstrated through the finds of the old excavations (*supra*, chapter II.1 and *infra*, chapter V.2), and, although the number of *tesserae* collected in the course of excavations is very limited, their presence might indicate the possibility that mosaics decorated some of the rooms.

b Chronological framing

The survey of bath complexes in *Lusitania* conducted by Maria Pilar Reis (Reis 2004) demonstrated that few establishments are earlier than the second century AD[6], but it can be otherwise argued that "almost all Hispanic public thermal complexes present a constructive design that was ideated in the Early Empire" (Fernández Ochoa and García Entero 1999: 143). In *Conimbriga*, where the oldest public baths of *Lusitania*, the *Terme do Sul*, are attested (see note 6), in the course of the Flavian age, the *Terme da Muralha* were built (Correia and Reis 2000: 272; Reis 2004: 31). Activities in private *domus* as well as in public complexes continued there until the fourth century, when the *Terme do Aqueduto* were constructed next to the *castellum aquae*. The *Terme do Alto da Cidade* in *Bracara Augusta* present several phases: a building articulated in at least 4 large rooms arranged around an open area, dating of the age of Claudius or Tiberius, was transformed into a thermal complex in the early second century. After a rebuild, which did not change the volume but rather the spatial organization, the monument underwent a new transformation of its "cold" sector at the end of the third century, while a remodelling of the "warm" sector was undertaken in the middle of the fourth century (Martins and Silva 2000: 75). Also the baths of the

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[4] In this scheme we can enlist the thermal complexes of phase I of *Baelo Claudia*, Los Arcos II in *Clunia*, the monumental bath-house of *Segobriga*, the phase I of *Bilbilis*, *Arcobriga*, the building in Calle Honda in Cartagena and the phase I of Gijón: Fernández Ochoa and García Entero 1999: 142, 145-148.

[5] Phase II of *Baetulo*, Munigua, Los Bañales, the central baths of *Segobriga*, the Augustan complex of *Conimbriga*, the phase II of *Bilbilis*, the building in Calle Padre Blanco in Astorga, the peripheral baths of *Conimbriga*, the Forum Baths of *Complutum* and the phase II in Gijón. Fernández Ochoa and García Entero 1999: 142, 148-149.

[6] Among the public baths that were active during the first century AD we can mention: in *Conimbriga* the *Terme do Sul* (the oldest public baths known at this stage of research in *Lusitania*, built already at the end of the first century BC), and the *Terme da Muralha* (Reis 2004: 30-31); and the baths of the *Civitas Igaeditanorum* (Idanha-a-Velha: Reis 2004: 30).

Spanish town of Ilerda are built in the second half of the first century AD, above existing buildings (Payà 2000: 179).

The transformation of pre-existing buildings into a thermal complex, which in *Ammaia* seems to have happened at the end of the first or beginning of the second century AD, therefore fully complies with this general chronological framework.

In *Ammaia*, as in *Mirobriga*[7], the construction of a large thermal complex is connected with major projects of urban expansion and transformation (Reis 2004: 29), and like in Braga, such intervention should be regarded as part of the large-scale urban renewal projects undertaken begun during the Flavian period and completed under Trajan and Hadrian (Martins and Silva 2000: 81). In this framework, also the *Grandes Termes do Sul* of *Conimbriga* (the extensive rebuild of the Republican building) should be considered as part of a Flavian project of urban "makeover" implemented only from the reign of Trajan onwards (Correia and Reis 2000: 274).

It is indeed obvious that the history of these complexes, of their construction, remodelling, reuse or reconversion and abandonment, follows closely the history of the town itself. Firstly, this is logical from the political and administrative points of view, because there was the need of municipal authorities to supervise their functioning and maintenance. But it also makes sense from the economic perspective, as there would have been the need of financial means to guarantee the water and fuel provisioning (Fernández Ochoa – Zarzalejos Preto 2001: 29). In our Baths no traces of reuse or reconversion have been detected, only signs of a slow process of abandonment, followed by eventual robbing, not necessarily within a tight time span after the cessation of use. On the contrary, in the *Hispaniae*, like elsewhere in the Roman world, many public thermal complexes continued to be occupied through Late Antiquity, as they were often converted into dwellings or into workshops, as in *Clunia*, as the presence of ovens attracts and facilitates production and manufacturing activities (Fernández Ochoa and Zarzalejos Preto 1997: 30–31).

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[7] The East Baths of *Mirobriga*, which are earlier than the West Baths of the same town, were initiated at least in the early second century: Biers 1988: 109. The East Baths underwent a "continued expansion of bathing facilities from the early second century until the probable abandonment of the building in the second half of the third century, or slightly later", when the larger and finer complex of the West baths was still active: Biers 1988: 112.

II.5 THE WALL STRUCTURES

Vincenzo E.J. Macchione

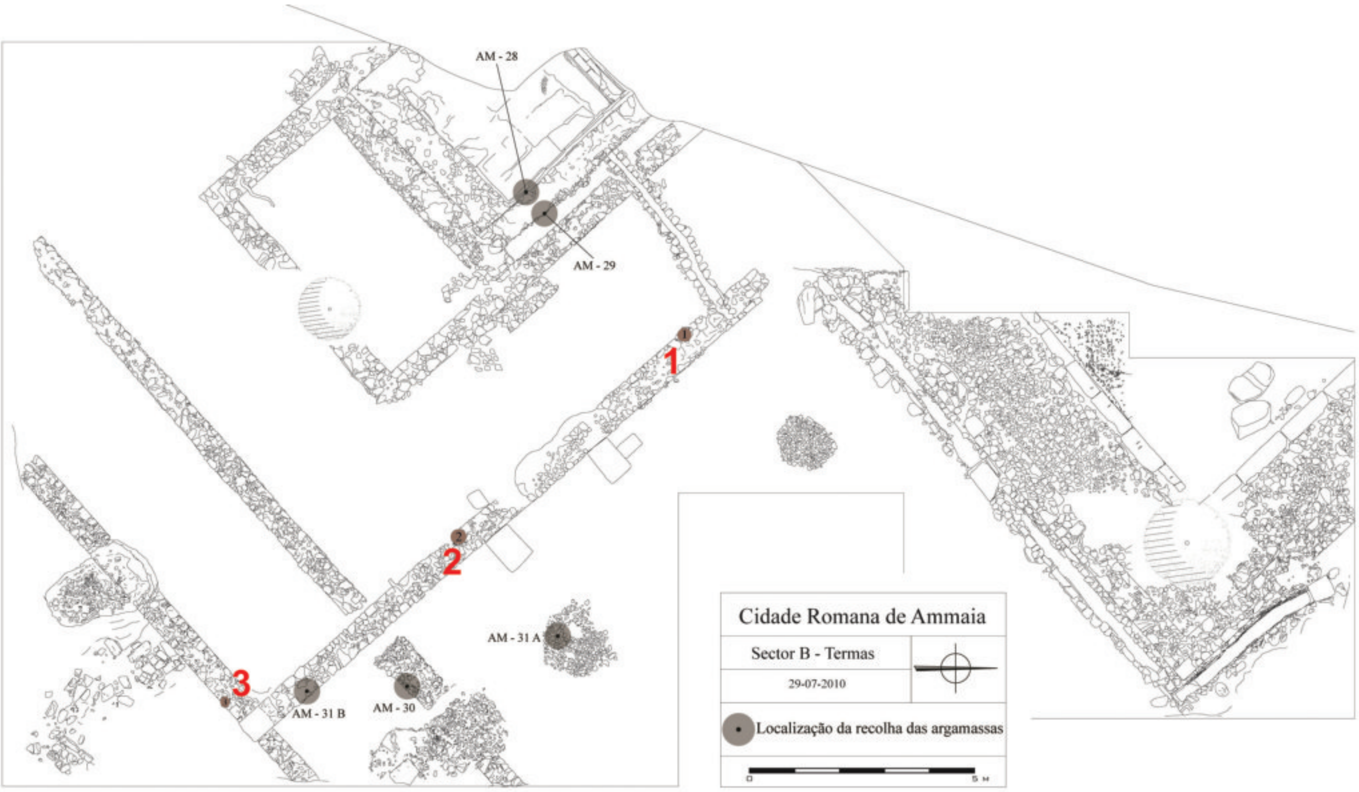

Fig. 78 *Ammaia*, sector B, Baths. Plan with location of samples (1 = SU 15; 2 = SU 44; 3 = SU 87).

SU: 15; Year: 2011; Sector: B; Figs. 78, 236b

The sample SU 15 presents foundation in pebbles in sight and only a row of stone elements with wall fillings of splinters of shale was left. This sample has wall fillings that correspond to a module of 0.445m and 0.399m. Notes: classified as Type Ia are also the samples from the Forum SUs 2015b and 2045.

Binder: the sample presents use of refluent mortar; stone material: granite; dimensions: max.: 0.176 (H) by 0.361m (W), 0.205 (H) by 0.276m (W), 0.144 (H) by 0.402m (W); med.: 0.154 (H) by 0.177m (W), 0.125 (H) by 0.223m (W); min.: 0.10 (H) by 0.121m (W), 0.08 (H) by 0.125m (W).

Type. Ia, characterised by an average building technique with irregular outline facing of medium size and wall fillings. The inner core is characterised by irregular blocks. A technique, therefore, originally similar to Type I, but which presents different elements that make a complex visual effect characterised by a greater regularity.

SU: 44; Year: 2011; Sector: B; Figs. 78, 237

The samples SU 44 has its foundation in pebbles in sight and only a row of stone elements with wall fillings of splinters of shale was left. The two drafts of orders are easily recognisable, corresponding to a building criterion, as previously noticed, widely attested in the Forum area. This sample has wall fillings that correspond to a module of 0.445m and 0.399m. Notes: classified as Type Ia are also the samples from Forum SUs 2015b and 2045.

Binder: SU 44 has the same features of SU 15, but there is no presence of refluent mortar; stone material: granite; dimensions: max.: 0.113 (H) by 0.353m (W), 0.20 (H) by 0.367m (W), 0.265 (H) by 0.287m (W); med.: 0.231 (H) by 0.267m (W), 0.173 (H) by 0.35m (W); min.: 0.128 (H) by 0.20m (W), 0.09 (H) by 0.161m (W), 0.13 (H) by 0.12m (W).

Type: Ia, characterised by an average building technique with irregular outline facing of medium size and wall fillings. The inner core is characterised by irregular blocks. A technique, therefore, originally similar to Type I, but which presents different elements that generate a complex visual effect characterised by a higher regularity.

SU: 87; Year: 2011; Sector: B; Figs. 78, 238
The sample SU 87 has its foundation in pebbles in sight and only a row of stone elements with wall fillings of splinters of shale was left in place. The sample presents a lack of mortar ebbing and the wall fillings obtained from small elements to replace the real wedges, usually made of shale. A small difference between the other samples from the Baths (SU 15 and 44) is found in the measurements of the stone material with which the inner core is composed. Notes: classified as Type Ia are also the samples of from the Forum SU 2015b.

Binder: the main feature is the lack of ebbing mortar; stone material: granite; dimensions: max.: 0.214 (H) by 0.491m (W); 0.207 (H) by 0.306m (W); med.: 0.124 (H) by 0.24m (W), 0.14 (H) by 0.187m (W); min.: 0.068 (H) by 0.117m (W), 0.057 (H) by 0.112m (W).

Type: Ia, characterised by an average building technique with irregular outline facing of medium size and wall fillings. The inner core is characterised by irregular blocks. A technique, therefore, originally similar to Type I, but which presents different elements that make a complex visual effect characterised by a greater regularity.

II.6 THE FINE WARES

José Carlos Quaresma

The data are presented here according to the following order: progressive number, inventory number, year of excavation, provenience, dimensions, class, production, shape, description, chronology, references.

The inventory number is composed on the basis of the: location (AM), year (00), sector (B), square (Q0000) or SU number (00), internal progressive number. Description of fabric groups is given in chapter V.3. Measurements are given in millimetres.

Abbreviations

Aj. = Andújar (Roca Roumens and Fernández García 1999)
Consp. = *Conspectus* (Ettlinger *et al*. 1990)
CV = Bussière 2000
Den. = Deneauve 1969
Diam. = reconstructed diameter
Dr: = Dressel (Bussière 2000)
Drag. = Dragendorff (Passelac and Vernhet 1993; Mayet 1984)
Hisp. = Hispanic (Roca Roumens and Fernández García 1999; Paz Peralta 2008)
Lud. Tb. = Ludowici Tb (Mayet 1984)
Mayet = Mayet 1975
Ritt. = Ritterling (Passelac and Vernhet 1993)
s. = square
Service = Vernhet 1976
SU = stratigraphic unit

1 - Inv. no. AM-08-B-[47]-4 (Fig. 79)
Year 2008. SU 47. Measurements: thickness 2.5, length 24. Thin walls. Production: *Hispania*. Group 1b (grey clay, orange surface). Vertical wall. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

2 - Inv. no. AM-09-B-[104]-2 (Fig. 79)
Year 2009. SU 104. Measurements: diam. 120, thickness 3-6, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag.24/25. Rim with inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

3 - Inv. no. AM-09-B-[104]-1 (Fig. 79)
Year 2009. SU 104. Measurements: diam. 170, thickness 3-3.5, length 21. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 19. Low wall with two outer mouldings. Chronology: AD 40-50. Reference: Passelac and Vernhet 1993: 571-580.

4 - Inv. no. AM-09-B-[114]-2 + 3 (Fig. 79)
Year 2009. SU 114. Measurements: thickness 2.5-4, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Wall with round shape. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

5 - Inv. no. AM-09-B-[135]-1 (Fig. 79)
Year 2009. SU 135. Measurements: diam. 80, thickness 2.5-3. length 27. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Slightly introverted rim. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

6 - Inv. no. AM-09-B-[150]-2 (Fig. 79)
Year 2009. SU 150. Measurements: thickness 2.5-3. length 24. Lamp. Production: *Baetica*, coastline. Shape: discus-type. Shoulder and discus. Rounded shoulder separated from the discus by two grooves. Chronology: AD 50-70. Reference: Bussière 2000: 30.

7 - Inv. no. AM-09-B-[154]-10 (Fig. 79)
Year 2009. SU 154. Measurements: thickness 3, length 9. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 1. Slightly introverted rim. Chronology: AD 40-60. Reference: Passelac and Vernhet 1993: 571-580.

8 - Inv. no. AM-09-B-[154]-8 + 9 (Fig. 79)
Year 2009. SU 154. Measurements: diam. 140, thickness 3.5-5, length: 24. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 18. Thickened rim with sub-triangular lip. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

9 - Inv. no. AM-09-B-[154]-3 + 7 (Fig. 79)
Year 2009. SU 154. Measurements: diam. 90, thickness 2.5-3, length 26. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Vertical, thick rim. Inner and outer groove. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

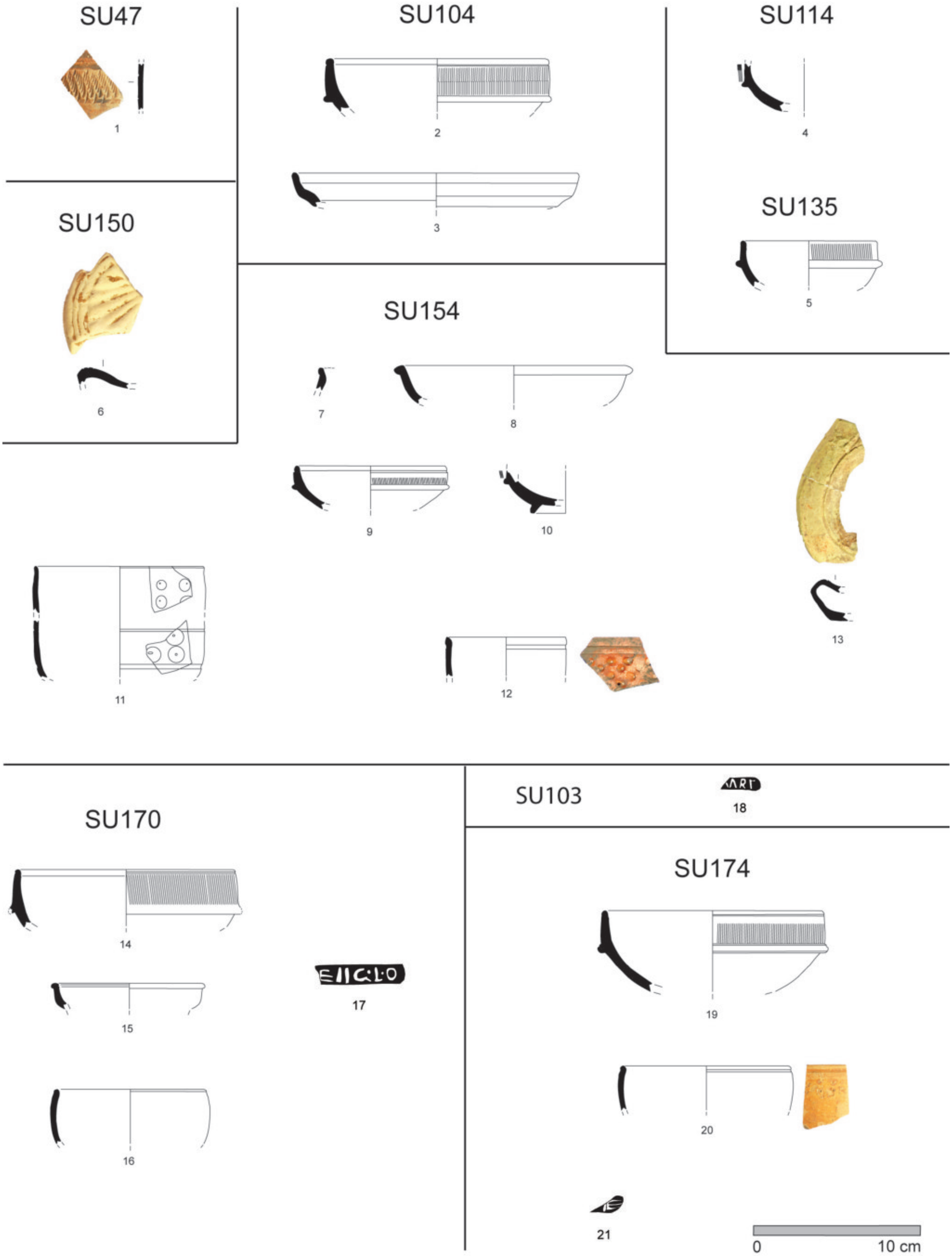

Fig. 79 *Ammaia*, Baths. Fine wares from the Claudio-Neronian layers.

10 - Inv. no. AM-09-B-[154]-1 (Fig. 79)
Year 2009. SU 154. Measurements: thickness 3-6, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Bottom. Thick wall and triangular ring-foot. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

11 - Inv. no. AM-09-B-[154]-25+26 (Fig. 79)
Year 2009. SU 154. Measurements: diam. 100, thickness 2-3, length 28. Thin walls. Production: *Hispania*. Group 1b. Shape: Mayet 36. Slightly thickened rim. Barbotine decoration (dots) on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

12 - Inv. no. AM-09-B-[154]-35 (Fig. 79)
Year 2009. SU 154. Measurements: diam. 70, thickness 2.5, length 21. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 36. Slightly thickened rim, marked by an outer groove. Barbotine decoration (very small dots) on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

13 - Inv. no. AM-09-B-[154]-15 (Fig. 79)
Year 2009. SU 154. Measurements: height 4.8, thickness 3-4, length 15. Lamp. Production: *Baetica*, coastline. Shape: Volutes-type. Shoulder and wall. Rounded shoulder separated from the discus by a groove. Over-moulding. Chronology: AD 40-70.Reference: Bussière 2000: 22.

14 - Inv. no. AM-09-B-[170]-8 (Fig. 79)
Year 2009. SU 170. Measurements: diam. 130, thickness 2.5-4.5, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Slightly introverted rim. Inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

15 - Inv. no. AM-09-B-[170]-12 (Fig. 79)
Year 2009. SU 170. Measurements: diam. 90, thickness 3-3.5, length 14. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Rim. Short upper quarter of circle. Thickened rim through a small lip. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

16 - Inv. no. AM-09-B-[170]-14 (Fig. 79)
Year 2009. SU 170. Measurements: diam. 90, thickness 3. length 28. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. Chronology: AD 40-70. Reference: Mayet 1975: 72.

17 - Inv. no. AM-09-B-[170]-3 (Fig. 79)
Year 2009. SU 170. Measurements: thickness 4, length 60. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Plate. Simple bottom fragment with rectangular impression on the bottom. Potter C.IAEG.L.O[1]. Chronology: AD 40-70. Reference: Saenz Preciado and Saenz Preciado 1999: 95.

18- Inv. no. AM-09-B-[103]-1 (Fig. 79)
Year 2009. SU 103. Measurements: thickness 3. length 45. *Terra Sigillata*. Production: South-Gaulish. Shape: Cup. Simple bottom with rectangular impression of the Potter Murrus or Mur-[2]. Chronology: AD 40-70. Reference: Polak 2000: 278.

19 - Inv. no. AM-09-B-[174]-1 (Fig. 79)
Year 2009. SU 174. Measurements: thickness 3-4, length 48. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Vertical rim. Rouletted decoration on the outer wall with stamp of Potter Murrus or Mur-[3]. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

20 - Inv. no. AM-09-[174]-5 (Fig. 79)
Year 2009. SU 174. Measurements: diam. 100, thickness 3-3.5, length 23. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. Sandy decoration on the outer wall. Stamp by Murrus or Mur- (see no. 18). Chronology: AD 40-70. Reference: Mayet 1975: 72.

21 - Inv. no. AM-09-B-[174]-2 (Fig. 79)
Year 2009. SU 174. Measurements: thickness 3, length 19. *Terra Sigillata*. Production: Italic. Simple bottom with *in planta pedis* impression. Chronology: AD 15+. Reference: Oxé, Comfort and Kenrick 2000: 36.

22 - Inv. no. AM-11-B-[200]-7+14 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 210, thickness 3-4.5, length 22. *Terra Sigillata*. Production: Italic. Shape: Consp. 19. Rim. Short upper wall with one inner and two outer grooves. Chronology: AD 10-40. Reference: Ettlinger *et al*. 1990: 84.

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[1] C.IAEIG.L.O is an Hispanic potter, whose stamp's text]EIIG.L.O contains a repeated I, its G is barely impressed and a dot divides the letters G, L and O. M. Bustamante Álvarez (2010: 502, 679, nos. 74-75) dates stratigraphically his activity from 70-100 AD, but dies are clearly different containing the text C.I.A.E.F or C.IAE, that Garabito (1978: 131) had read as C(*inius*) A(*emilius*) F(*ecerunt*). In the Baths of *Ammaia*, the die C.IA[, from the potter C.I.A.E.F., pops up exactly in the Flavian layers. The first name, C.IAEIG.L.O, seems then to be an earlier potter.

[2] This stamp could be read]MV. Together with the stamps of nos. 19 and 20 it could be assigned to Murrus or Mur-, from La Graufesenque, who has worked between AD 40 and 70 (Oswald 1931: 241; Bémont 1976: 283). Mees (1995: 88-89) proposes a different and later dating from AD 70-90.

[3] This stamp could be read]MRI. See no. 18.

23 - Inv. no. AM-11-B-[200]-1 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 120, thickness 3, length 15. *Terra Sigillata*. Production: Italic. Shape: Consp. 21.1. Vertical wall and slightly thickened rim. Inner groove under the rim. Chronology: AD 10-70. Reference: Ettlinger *et al*. 1990: 88.

24 - Inv. no. AM-11-B-[200]-8 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 116, thickness 3-4.5, length 17. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Rim. One groove and one moulding in the outer wall. Chronology: 20 BC-AD 30. Reference: Ettlinger *et al*. 1990: 90.

25 - Inv. no. AM-11-B-[200]-11 (Fig. 80)
Year 2011. SU 200. Measurements: 170, thickness 2.5-3.5, length 25. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag.18. Extroverted rim which breaks the profile of the wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

26 - Inv. no. AM-11-B-[200]-2 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 70, thickness 3-4, length 21. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 5c. Carinated wall, thickened at the angle. Chronology: AD 30-50. Reference: Passelac and Vernhet 1993: 571-580.

27 - Inv. no. AM-11-B-[200]-18 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 90, thickness 3.5-4, length 21. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 9b. Rim. Slightly oblique wall with sub-triangular lip. Thin groove on the outer wall. Chronology: AD 15-70. Reference: Passelac and Vernhet 1993: 571-580.

28 - Inv. no. AM-11-B-[200]-12 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 90, thickness 2.5-4.5, length 22. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim. Large inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

29 - Inv. no. AM-11-B-[200]-20 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 70, thickness 3-3.5, length 18. *Terra Sigillata*. Production: South-Gaulish. Shape:Drag.27b. Rim with small, slightly oblique lip. Inner groove. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

30 - Inv. no. AM-11-B-[200]-24 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 100, length 28. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Rim. Outer wall with two grooves under the rim. Barbotine decoration (water leaves) on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

31 - Inv. no. AM-11-B-[200]-27 (Fig. 80)
Year 2011. SU 200. Measurements: diam. 110, thickness 2.5-3, length 19. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Thickened rim. Outer wall with one moulding above the sandy decoration. Chronology: AD 40-70. Reference: Mayet 1975: 72.

32 - Inv. no. AM-11-B-[201]-8 (Fig. 80)
Year 2011. SU 201. Measurements: diam. 90, thickness 2.5-4, length 20. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Rim. Two inner grooves. Roulette on the outer rim and carina. Chronology: 20 BC-AD 30. Reference: Ettlinger *et al*. 1990: 92.

33 - Inv. no. AM-11-B-[201]-9 (Fig. 80)
Year 2011. SU 201. Measurements: diam. 80, thickness 3-3.5, length 21. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Rim with small, slightly oblique lip. Inner groove. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

34 - Inv. no. AM-11-B-[201]-4 (Fig. 80)
Year 2011. SU 201. Measurements: diam. 100, thickness 2.5-3, length 16. Thin walls. Production: *Hispania*. Group 1b (Grey clay. Orange surface). Shape: Mayet 37. Rim with inner and outer groove. Vertical wall. Sandy decoration on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

35 - Inv. no. AM-11-B-[201]-37 + [221]-2 (Fig. 80)
Year 2011. SU 201. Measurements: thickness 2-4, length 15. Thin walls. Production: *Augusta Emerita* . Shape: Mayet 49. Vertical rim. Carinated lid. Chronology: AD 40-70. Reference: Mayet 1975: 110.

36 - Inv. no. AM-11-B-[201]-1 (Fig. 80)
Year 2011. SU 201. Measurements: thickness 4-5, length 47. Lamp. Production: *Baetica*, coastline. Shape: Dr. 20. Round handle. Two grooves between the shoulder and the discus. Chronology: AD 50-70. Reference: Bussière 2000: 30.

37 - Inv. no. AM-11-B-[201]-2 (Fig. 80)
Year 2011. SU 201. Measurements: thickness 2.5, length 23. Lamp. Production: *Baetica*, coastline. Discus. Barbotine decoration (vegetal) on the discus. Chronology: AD 40-70. Reference: Bussière 2000: 22-28.

38 - Inv. no. AM-11-B-[206]-s/n inv. (Fig. 80)
Year 2011. SU 206. Measurements: thickness 2-3.5, length 16. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 1. Slightly extroverted rim which breaks the profile of the wall. Chronology: AD 20-60. Reference: Passelac and Vernhet 1993: 571-580.

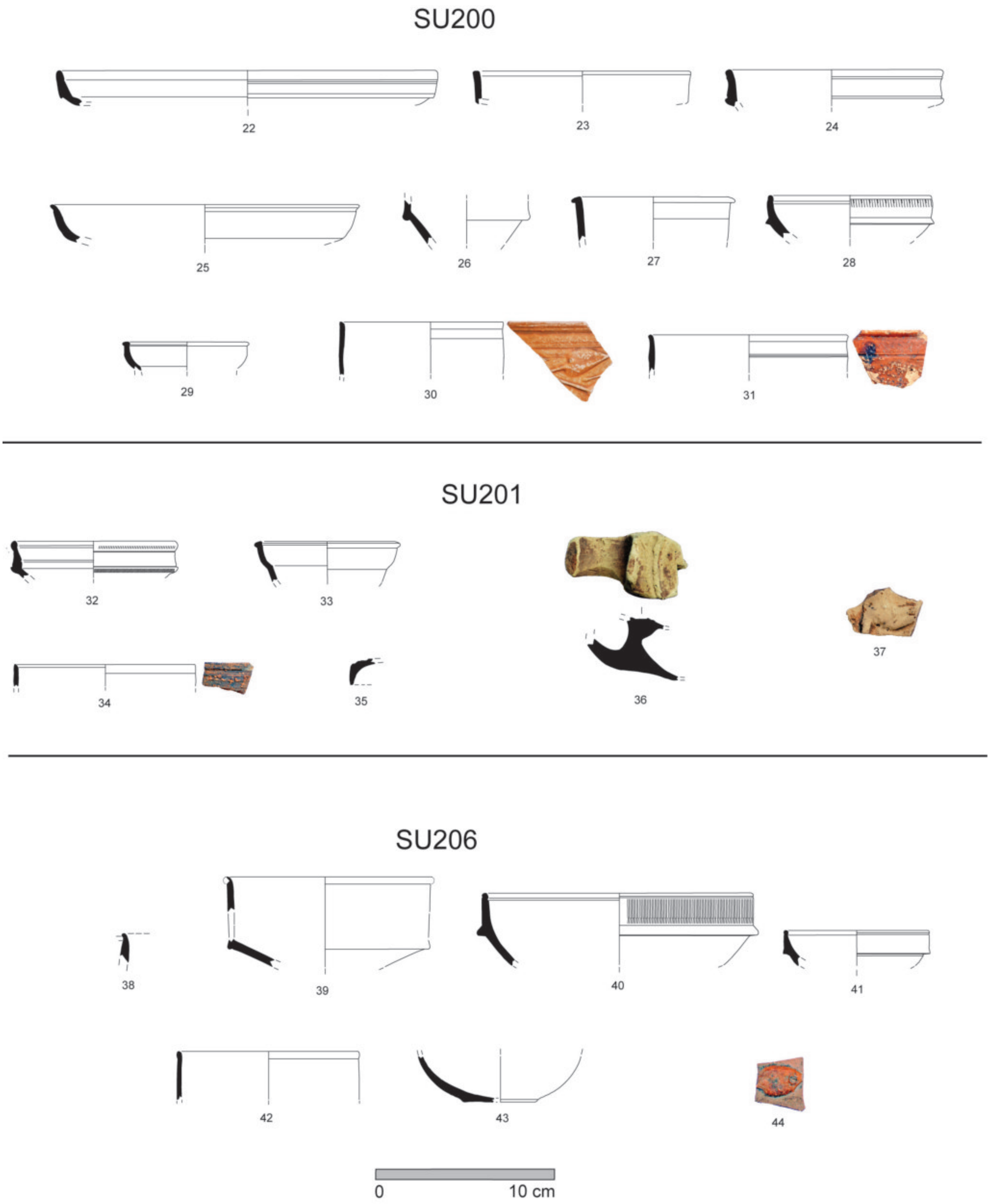

Fig. 80 *Ammaia*, Baths. Fine wares from the Claudio-Neronian layers.

39 - Inv. no. AM-11-B-[206]-6 (Fig. 80)
Year 2011. SU 206. Measurements: diam. 110, thickness 3, length 42. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 9b. Thickened rim and carina.Chronology: AD 15-70. Reference: Passelac and Vernhet 1993: 571-580.

40 - Inv. no. AM-11-B-[206]-5 (Fig. 80)
Year 2011. SU 206. Measurements: diam. 130, thickness 3-4, length 39. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim with inner groove under the rim. Rouletted decoration on the outer wall. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

41 - Inv. no. AM-11-B-[206]-8 (Fig. 80)
Year 2011. SU 206. Measurements: diam. 80, thickness 2-4, length 20. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag.24/25. Rim with inner groove under the rim. Chronology: AD 40-70. Reference: Passelac and Vernhet 1993: 571-580.

42 - Inv. no. AM-11-B-[206]-4 (Fig. 80)
Year 2011. SU 206. Measurements: diam. 100, thickness 2.5, length 22. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. Chronology: AD 40-70. Reference: Mayet 1975: 72.

43 - Inv. no. AM-11-B-[206]-3 (Fig. 80)
Year 2011. SU 206. Measurements: thickness 2.5-4, length 44. Thin walls. Production: *Augusta Emerita* . Shape: Mayet 37. Bottom fragment. Curved wall. Plane basis. Chronology: AD 40-70. Reference: Mayet 1975: 72.

44 - Inv. no. AM-11-B-[206]-2 (Fig. 80)
Year 2011. SU 206. Measurements: thickness 2.5, length 16. Thin walls. Production: *Baetica*. Vertical wall. Barbotine decoration (vegetal) on the outer wall. Chronology: AD 40-70. Reference: Mayet 1975: 72.

45 - Inv. no. AM-08-B-[35]-2 (Fig. 81)
Year 2008. SU 35. Measurements: thickness 3-4.5, length 27. *Terra Sigillata*. Production: Italic. Shape: Consp.22? Wall. Carinated vessel. Straight walls. Chronology: 20 BC-AD 30+. Reference: Ettlinger *et al*. 1990: 92.

46 - Inv. no. AM-08-B-[35]-8+10 (Fig. 81)
Year 2008. SU 35. Measurements: diam. 180, thickness 4-4.5, length 57. *Terra Sigillata*. Production: Hispanic. La Rioja. Shape: Drag. 15/17. Rim. Plain, oblique wall. Round rim. Chronology: AD 40-100. Reference: Mayet 1984: 69.

47 - Inv. no. AM-08-B-[35]-4 (Fig. 81)
Year 2008. SU 35. Measurements: diam. 170, thickness 3.5-5.5, length 36. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 36. Rim with thick, plain lip. Chronology: AD 70-100. Reference: Mayet 1984: 69.

48 - Inv. no. AM-08-B-[35]-5 (Fig. 81)
Year 2008. SU 35. Measurements: thickness 4, length 31. *Terra Sigillata*. Production: Hispanic - La Rioja. Slightly curved wall. Decoration zone with concentric circles. Chronology: AD 70-100. Reference: Mayet 1984: 81.

49 - Inv. no. AM-08-B-[35]-13 (Fig. 81)
Year 2008. SU 35. Measurements: thickness 3-3.5, Length 12. Thin walls. Production: *Hispania*. Shape: Mayet 38. Wall fragment. Thickened carina. Barbotine decoration (dots) on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

50 - Inv. no. AM-08-B-[35]-14 (Fig. 81)
Year 2008. SU 35. Measurements: thickness 2.5, length 21. Thin walls. Production: *Baetica*, coastline. Slightly curved wall. Barbotine decoration (scales) on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

51 - Inv. no. AM-08-B-[79]-10 (Fig. 81)
Year 2008. SU 79. Measurements: thickness: 3-4, length 26. *Terra Sigillata*. Production: Italic. Shape: Consp. 32? Wall with outer moulding at the carina. Chronology: AD 15-100. Reference: Ettlinger *et al*. 1990: 108.

52 - Inv. no. AM-08-B-[79]-7 (Fig. 81)
Year 2008. SU 79. Measurements: thickness 2.5-3, length 15. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Slightly curved rim. Inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

53 - Inv. no. AM-08-B-[79]-5 (Fig. 81)
Year 2008. SU 79. Measurements: diam. 110, thickness 2.5-3, length 15. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag.27b. Rim with long horizontal lip with roulette on the upper face. Roulette decoration. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

54 - Inv. no. AM-08-B-[79]-1 (Fig. 81)
Year 2008. SU 79. Measurements: diam. 70, thickness 3, length 12. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27c. Thickened rim. Rounded upper quarter of circle. Chronology: AD 50-100. Reference: Passelac and Vernhet 1993: 571-580.

55 - Inv. no. AM-08-B-[79]-14 (Fig. 81)
Year 2008. SU 79. Measurements: diam. 100, thickness 2.5, length 21. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly marked rim. An outer moulding above

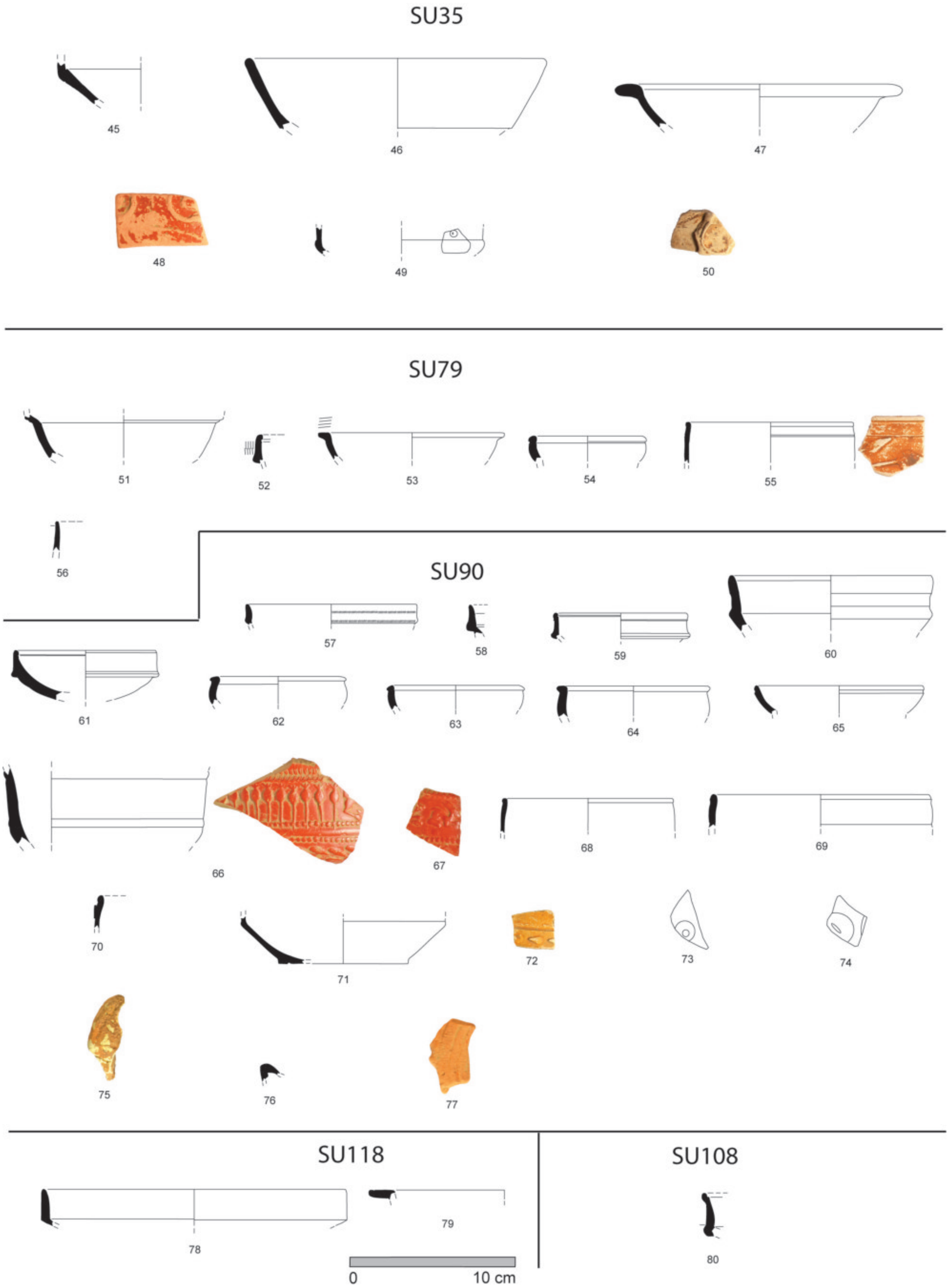

Fig. 81 *Ammaia*, Baths. Fine wares from the Flavian layers.

the barbotine decoration (palm leaves). Chronology: AD 70-100. Reference: Mayet 1975: 72.

56 - Inv. no. AM-08-B-[79]-16 (Fig. 81)
Year 2008. SU 79. Measurements: thickness 2-2.5, length 15. Thin walls. Production: *Hispania*. Group 1a. Shape: Mayet 36 or 37. Slightly marked rim. Chronology: AD 70-100. Reference: Mayet 1975: 72.

57 - Inv. no. AM-09-B-[90]-46 (Fig. 81)
Year 2009. SU 90 Measurements: diam. 100, thickness 3, length 9. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Vertical rim. Two outer zones of roulette decoration. Chronology: 20 BC-AD 30+. Reference: Ettlinger *et al*. 1990: 90.

58 - Inv. no. AM-09-B-[90]-53 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2.5-3, length 18. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Rim with two inner grooves. Chronology: 20 BC-AD 30+. Reference: Ettlinger *et al*. 1990: 90.

59 - Inv. no. AM-09-B-[90]-54 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 80, thickness 2.5-3, length 12. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Rim with one inner groove and outer moulding. Chronology: 20 BC-AD 30+. Reference: Ettlinger *et al*. 1990: 90.

60 - Inv. no. AM-09-B-[90]-43 (Fig. 81)
Year 2009. SU 90. Measurements: 120, thickness 3.5-6, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 5a. Rim with inner groove. Two thin outer mouldings. Chronology: AD 30-40. Reference: Passelac and Vernhet 1993: 571-580.

61 - Inv. no. AM-09-B-[90]-41 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 85, thickness 2.5-4.5, length 36. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim with inner groove. Chronology: AD 70-100. Reference: Passelac and Vernhet 1993: 571-580.

62 - Inv. no. AM-09-B-[90]-48 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 80, thickness 3.5-4, length 11. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Rim with bevelled, oblique lip. Inner groove. Chronology: AD 50-100. Reference: Passelac and Vernhet 1993: 571-580.

63 - Inv. no. AM-09-B-[90]-7 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 80, thickness 3, length 11. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag.27b. Rim with bevelled, oblique, short lip. Inner groove. Chronology: AD 50-100. Reference: Passelac and Vernhet 1993: 571-580.

64 - Inv. no. AM-09-B-[90]-47 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 80, thickness 3.5-4, length 15. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Rim with horizontal lip. Inner groove. Chronology: AD 50-100. Reference: Passelac and Vernhet 1993: 571-580.

65 - Inv. no. AM-09-B-[90]-8 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 100, thickness 2.5-3, length 17. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 27. Rim with outer groove under the rim. Chronology: AD 70-100. Reference: Mayet 1984: 69.

66 - Inv. no. AM-09-B-[90]-25 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 180, thickness 3.5-6, length 39. *Terra Sigillata*. Production: South-Gaulish. Thick, reddish, bright gloss. Shape: Drag.29. Slightly extroverted wall. Decoration zone delimitated by dots lines. Sequence of a repeated vertical, vegetal motif. Chronology: AD 40-50. Reference: Tilhard 2004: fig. 180 no. 561

67 - Inv. no. AM-09-B-[90]-21 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 4, length 44. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 29. Wall with thick, reddish, bright gloss. Decoration zone with a rabbit. Dots lines delineate the zone. Chronology: AD 40-50. Reference: Tilhard 2004: fig.152, no. 279.

68 - Inv. no. AM-09-B-[90]-85 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 100, thickness 2.5-3, length 21. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Rim. Outer groove marks the rim. Chronology: AD 70-100. Reference: Mayet 1975: 72.

69 - Inv. no. AM-09-B-[90]-79 (Fig. 81)
Year 2009. SU 90. Measurements: diam. 130, thickness 3-3.5, length 18. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 43. Rim. Upper, largely moulded wall. Chronology: AD 70-100. Reference: Mayet 1975: 98.

70 - Inv. no. AM-09-B-[90]-86 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 3, length 18. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 38. Slightly thickened rim. Handle not preserved. Chronology: AD 70-100. Reference: Mayet 1975: 72.

71 - Inv. no. AM-09-B-[90]-84 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2.5-3, length 42. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 38. Horizontal bottom of carinated vessel. Chronology: AD 70-100. Reference: Mayet 1975: 72.

72 - Inv. no. AM-09-B-[90]-73 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2.5, length 22. Thin walls. Production: *Augusta Emerita*. Slightly curved wall. Barbotine decoration (horizontal sequence of very small water leaves). Chronology: AD 70-100. Reference: Mayet 1975: 72.

73 - Inv. no. AM-09-B-[90]-74 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 3, length 22. Thin walls. Production: *Augusta Emerita*. Slightly curved wall. Barbotine decoration (dots). Chronology: AD 70-100. Reference: Mayet 1975: 72.

74 - Inv. no. AM-09-B-[90]-87 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2.5, length 19. Thin walls. Production: *Augusta Emerita*. Slightly curved wall. Barbotine decoration (dots). Chronology: AD 70-100. Reference: Mayet 1975: 72.

75 - Inv. no. AM-09-B-[90]-56 + 65 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 3, length 4.5. Lamp. Production: *Baetica*, coastline. Shape: Dr. 9. Sub-triangular nozzle. Chronology: AD 40-100. Reference: Bussière 2000: 22.

76 - Inv. no. AM-09-B-[90]-57 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2-3, length 10. Lamp. Production: *Augusta Emerita*. Shape: discus-type. Slightly rounded shoulder. Chronology: AD 70-100. Reference: Bussière 2000: 30.

77 - Inv. no. AM-09-B-[90]-57 (Fig. 81)
Year 2009. SU 90. Measurements: thickness 2-3, length 38. Lamp. Production: Africa. Shape: Den. 5G. Shoulder. Two grooves separate the shoulder from the discus. Chronology: AD 70-100. Reference: Bussière 2000: 30.

78 - Inv. no. AM-09-B-[118]-2 (Fig. 81)
Year 2009. SU 118. Measurements: diam. 180, thickness 2.5-3, length 19. *Terra Sigillata*. Production: Italic. Shape: Consp. 21. Vertical wall with pointed rim. Chronology: AD 10-90. Reference: Ettlinger *et al*. 1990: 88.

79 - Inv. no. AM-09-B-[118]-1 (Fig. 81)
Year 2009. SU 118. Measurements: diam. 160, thickness 2.5-3, length 15. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Hisp. 5. Rim. Horizontal flange. Chronology: AD 70-100. Reference: Mayet 1984: 69.

80 - Inv. no. AM-09-B-[108]-1 (Fig. 81)
Year 2009. SU 108. *Terra Sigillata*. Production: Italic. Shape: Consp. 21. Measurements: thickness 2.5-3, length 24. Rim with one inner groove. Chronology: AD 10-90. Reference: Ettlinger *et al*. 1990: 88.

81 - Inv. no. AM-09-B-[130]-3 (Fig. 82)
Year 2009. SU 130. Measurements: diam. 130, thickness3-4, length 26. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27c. Rim with bevelled, oblique lip. Well designed upper quarter of circle. Chronology: AD 50-100. Reference: Passelac and Vernhet 1993: 571-580.

82 - Inv. no. AM-09-B-[130]-23 (Fig. 82)
Year 2009. SU 130. Measurements: diam. 92, thickness 3-4, length 27. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 27. Rim. Short, upper quarter of circle. Rim is marked by an outer inflexion. Chronology: AD 70-100. Reference: Mayet 1984: 69.

83 - Inv. no. AM-09-B-[130]-28 (Fig. 82)
Year 2009. SU 130. Measurements: diam. 120, thickness 2.5-3, length 22. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Rim. Slightly introverted wall. Outer grooves. Barbotine decoration (water leaves). Chronology: AD 70-100. Reference: Mayet 1975: 72.

84 - Inv. no. AM-09-B-[130]-21 (Fig. 82)
Year 2009. SU 130. Measurements: thickness 2-3, length 55. Lamp. Production: *Augusta Emerita*. Shape: Volutes-type. Oblique shoulder. Over-moulding. Chronology: AD 70-100. Reference: Bussière 2000: 22.

85 - Inv. no. AM-09-B-[130]-20 (Fig. 82)
Year 2009. SU 130. Measurements: thickness 2-3, length 34. Lamp. Production: *Augusta Emerita*. Shape: Volutes-type. Shoulder. Over-moulded volute. Chronology: AD 70-100. Reference: Bussière 2000: 22.

86 - Inv. no. AM-09-B-[130]-22 (Fig. 82)
Year 2009. SU 130. Measurements: thickness 2-3.5, length 59. Lamp. Production: *Augusta Emerita*. Shape: Volutes-type. Oblique shoulder separated from the discus by a groove. Over-moulding. Chronology: AD 70-100. Reference: Bussière 2000: 22.

87 - Inv. no. AM-09-B-[130]-19 (Fig. 82)
Year 2009. SU 130. Measurements: thickness 2-4.5, length 56. Lamp. Production: *Baetica*. Shape: Den. 5F. Rounded shoulder. Tear-shape lamp. Chronology: 100 AD. Reference: Bussière 2000: 24.

88 - Inv. no. AM-09-B-[133]-2 (Fig. 82)
Year 2009. SU 133. Measurements: thickness 3.5, length 49. *Terra Sigillata*. Production: South-Gaulish. Thick, reddish, bright gloss. Shape: Drag. 29. Bottom. Lower decoration zone: sequence of elongated tongs. Chronology: AD 50-100. Reference: Tilhard 2004, fig. 142, nos. 197-205.

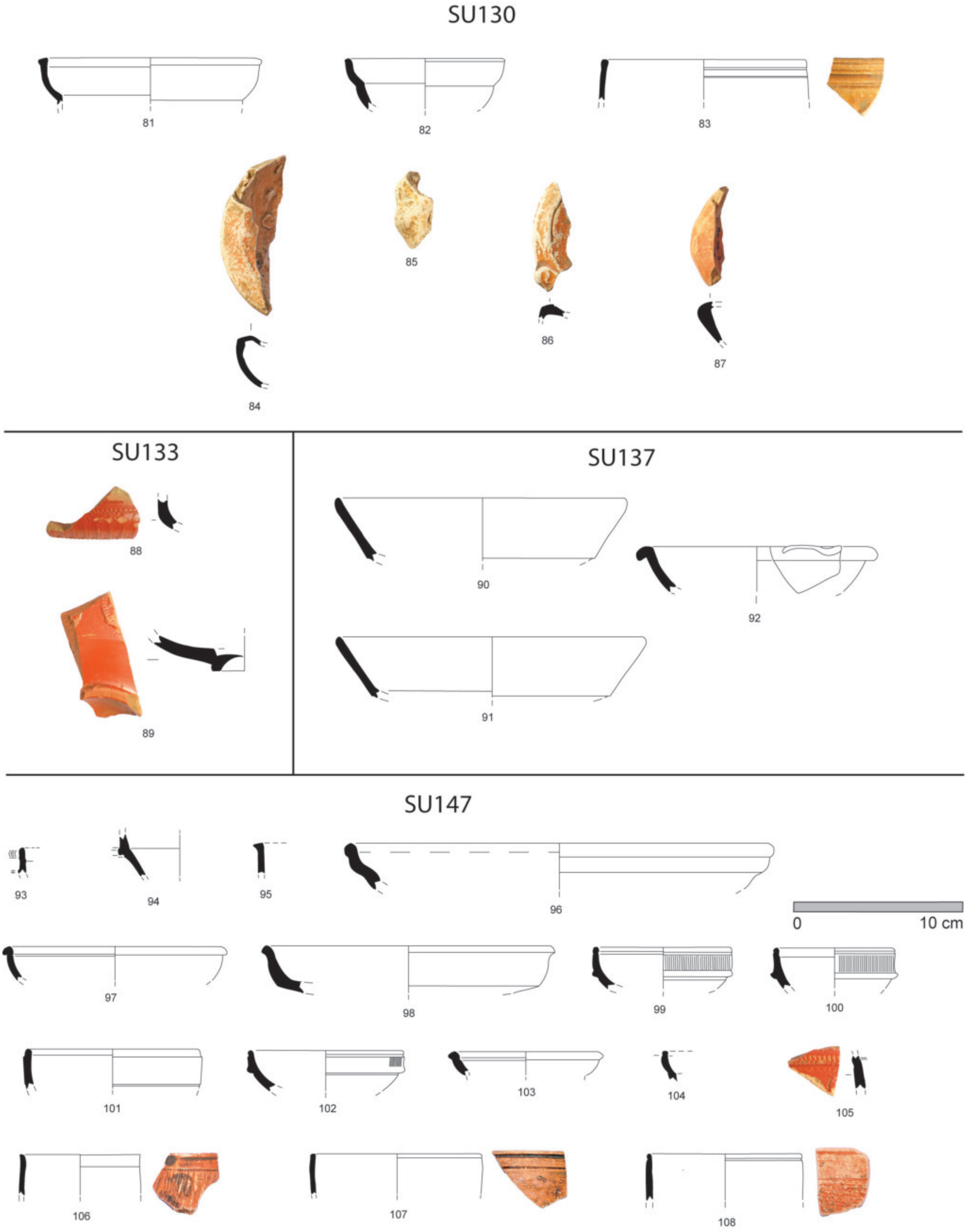

Fig. 82 *Ammaia*, Baths. Fine wares from the Flavian layers.

89 - Inv. no. AM-09-B-[133]-3 (Fig. 82)
Year 2009. SU 133. Measurements: diam. 18. thickness 5-6, length 46. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 37. Bottom with low ring-foot. Lower decoration zone with large concentric circles. Chronology: AD 70-100. Reference: Mayet 1984: 81.

90 - Inv. no. AM-09-B-[137]-1 (Fig. 82)
Year 2009. SU 137. Measurements: diam. 170, thickness 5, length 38. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 15/17. Rim. Plain, oblique wall. Chronology: AD 40-100. Reference: Mayet 1984: 69.

91 - Inv. no. AM-09-B-[137]-3 + 6 (Fig. 82)
Year 2009. SU 137. Measurements: diam. 180, thickness 4.5-5, length 38. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 15/17. Rim. Plain, oblique wall. Chronology: AD 40-100. Reference: Mayet 1984: 69.

92 - Inv. no. AM-09-B-[137]-4 (Fig. 82)
Year 2009. SU 137. Measurements: diam. 140, thickness 4-5,5, length 30. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag.36. Rim. Thick, short, curved flange. Barbotine water leaves on the flange. Chronology: AD 70-100. Reference: Mayet 1984: 69.

93 - Inv. no. AM-09-B-[147]-25 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 3, length 12. *Terra Sigillata*. Production: Italic. Shape: Consp. 22. Vertical rim. Roulette on the outer wall. Chronology: 20 BC – AD 30. Reference: Ettlinger *et al*. 1990: 90.

94 - Inv. no. AM-09-B-[147]-15 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 2.5-4, length 21. *Terra Sigillata*. Production: Italic. Shape: Consp. 23. Wall with thickened carina. Chronology: 20 BC – AD 70 + . Reference: Ettlinger *et al*. 1990: 100.

95 - Inv. no. AM-09-B-[147]-9 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 2-3, length 15. *Terra Sigillata*. Production: Italic. Shape: Consp. 27. Rim with triangular lip. Chronology: AD 15-70. Reference: Ettlinger *et al*. 1990: 100.

96 - Inv. no. AM-09-B-[147]-34 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 250, Thickness 5.5-6, Length 27. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 16. Thickened, rounded rim. Thin inner groove. Chronology: AD 15-60. Reference: Passelac and Vernhet 1993: 571-580.

97 - Inv. no. AM-09-B-[147]-10 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 130, thickness 3-3.5, length 18. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 8a. Rim with hanging lip. Inner groove. Chronology: AD 15-30. Reference: Passelac and Vernhet 1993: 571-580.

98 - Inv. no. AM-09-B-[147]-39 (Fig. 82)
Year 2009. SU 147. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 18. Measurements: diam. 170, thickness 3-6, length 29. Thickened rim. Short upper wall. Chronology: AD 70-100. Reference: Passelac and Vernhet 1993: 571-580.

99 - Inv. no. AM-09-B-[147]-38 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 3-4, length 24. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim. Large inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

100 - Inv. no. AM-09-B-[147]-40 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 70, thickness 2.5-4, length 21. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim Inner groove. Rouletted decoration on the outer wall. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

101 - Inv. no. AM-09-B-[147]-30 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 100, thickness 3-3.5, length 18. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim marked by a slight outer groove. Another one on the outer wall. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

102 - Inv. no. AM-09-B-[147]-19 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 90, thickness 2.5-4, length 24. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim. Large outer groove.Rouletted decoration on the outer wall. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

103 - Inv. no. AM-09-B-[147]-42 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 90, thickness 3-3.5, length 13. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Rim. Oblique upper quarter of circle. Short lip. Large inner groove. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

104 - Inv. no. AM-09-B-[147]-22 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 2.5-3, length 15. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27c. Rim marked both externally and internally by a thin groove. Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

105 - Inv. no. AM-09-B-[147]-26 (Fig. 82)
Year 2009. SU 147. Measurements: thickness 3.5-4.5, length

31. *Terra Sigillata*. Production: South-Gaulish. Thick, reddish, bright gloss. Shape: Drag. 29. Wall. Vegetal motif under a dots line. Chronology: AD 40-50. Reference: Tilhard 2004, fig. 180, no. 561.

106 - Inv. no. AM-09-B-[147]-79 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 70, thickness 2-2.5, length 2. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. External thin moulding above the roulette decoration. Chronology: AD 70-100. Reference: Mayet 1975: 72.

107 - Inv. no. AM-09-B-[147]-73 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 100, thickness 2.5, length 25. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. External groove above the sandy decoration. Chronology: AD 70-100. Reference: Mayet 1975: 72.

108 - Inv. no. AM-09-B-[147]-98 (Fig. 82)
Year 2009. SU 147. Measurements: diam. 90, thickness 2-3, length 39. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Rim marked by an outer groove. Sandy decoration on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

109 - Inv. no. AM-09-B-[147]-77 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2, length 25. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. Outer groove above the sandy decoration. Chronology: AD 70-100. Reference: Mayet 1975: 72.

110 - Inv. no. AM-09-B-[147]-83 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2.5, length 31. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly curved wall. Barbotine decoration (small water leaves). Chronology: AD 70-100. Reference: Mayet 1975: 72.

111 - Inv. no. AM-09-B-[147]-84 (Fig. 83)
Year 2009. SU 147. Measurements: diam. 110., thickness 2-2.5, length 20. Thin walls. Production: *Hispania*. Group 1a (Grey clay). Shape: Mayet 37. Rim marked by an outer groove. Sandy decoration on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

112 - Inv. no. AM-09-B-[147]-92 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2.5, length 20. Thin walls. Production: Group 1a (Grey clay). Slightly curved wall. Barbotine decoration on the outer wall (water leaf and small dots). Chronology: AD 70-100. Reference: Mayet 1975: 72.

113 - Inv. no. AM-09-B-[147]-63 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 3, length 30. Lamp. Production: *Baetica*, coastline. Discus. Decoration: Vegetal motif? Chronology: AD 70-100. Reference: Bussière 2000: 22-28.

114 - Inv. no. AM-09-B-[147]-57 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2, length 20. Lamp. Production: *Baetica*, coastline. Shape: Volutes-type. Wall. Lower part of a volute. Chronology: AD 70-100. Reference: Bussière 2000: 22.

115 - Inv. no. AM-09-B-[147]-56 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2-3, length 32. Lamp. Production: *Baetica*, coastline. Shape: Dr. 20. Rounded handle with a longitudinal outer groove. Chronology: AD 70-100. Reference: Bussière 2000: 28.

116 - Inv. no. AM-09-B-[147]-55 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 2-3, length 37. Lamp. Production: Africa. Shape: Den. 7b. Slightly oblique shoulder separated from the discus by a groove and two mouldings. Chronology:AD 70-100. Reference: Bussière 2000: 22-28.

117 - Inv. no. AM-09-B-[147]-31 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 3, length 25. *Terra Sigillata*. Production: Italic. Simple bottom with rectangular impression. Potter Cno. Ateius[4]. Chronology: AD 5-25. Reference: Oxe, Comfort and Kenrick 2000.

118 - Inv. no. AM-09-B-[147]-4 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 4, length 30. *Terra Sigillata*. Production: Italic. Shape: Cup. Simple bottom with sub-rectangular impression. Potter Ateius (see no. 117). Chronology: 5 BC - AD 40. Reference: Oxe, Comfort and Kenrick 2000.

119 - Inv. no. AM-09-B-[147]-5 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 3, length 32. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Simple bottom with rectangular impression. Potter Iunius[5]. Chronology: AD 50-80. Reference: Polak 2000: 247.

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[4] This stamp dates to AD 5-25, whereas the one of nos. 118 to 5 BC-AD 40 (Oxé, Comfort and Kenrick 2000: 119, 129). CN[has some similarities to nos. 863 and 14175 from publication of Oxé, Comfort and Kenrick 2000. ATEI presents the letters T and E geminated and similar to no. 8385 of the same work. The potter Speculator dates from AD 1-15 and its dye is quite similar to no. 29557 from OCK, in spite of this one has the text SPECI, rather than SPECL.

[5] Stamp OF.IVNII, similar to no.137 of Polak (2000: 247), who dates it to AD 50-80.

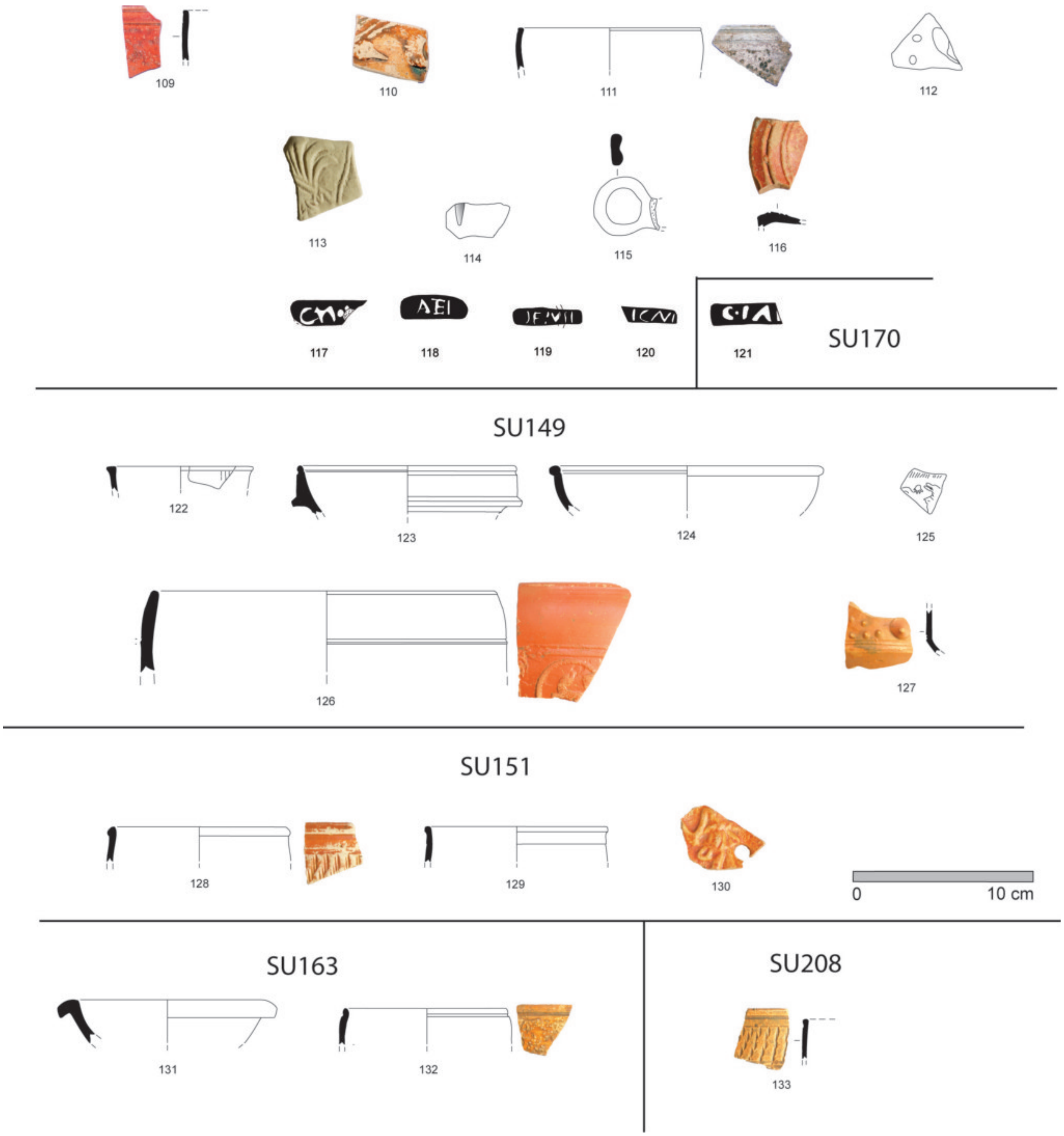

Fig. 83 *Ammaia*, Baths. Fine wares from the Flavian layers.

120 - Inv. no. AM-09-B-[147]-32 (Fig. 83)
Year 2009. SU 147. Measurements: thickness 4, length 29. *Terra Sigillata*. Production: South-Gaulish. Simple bottom with rectangular impression. Potter Gallicanus ii[6]. Chronology: AD 40-70. Reference: Polak 2000: 233.

121 - Inv. no. AM-09-B-[170]-3 (Fig. 83)
Year 2009. SU 170. Measurements: thickness 4, length 34. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Plate. Simple bottom with sub-rectangular impression. Potter C.I.A.E.F. (see no. 27). Chronology: AD 70-100. Reference: Bustamante 2010: 502.

122 - Inv. no. AM-09-B-[149]-9 (Fig. 83)
Year 2009. SU 149. Measurements: diam. 80, thickness 2-3, length 11. *Terra Sigillata*. Production: Italic. Shape: Consp. 31. Rim with short, horizontal lip. Rouletted decoration on the outer wall. Chronology: AD 10-20. Reference: Ettlinger *et al*. 1990: 106.

123 - Inv. no. AM-09-B-[149]-3 (Fig. 83)
Year 2009. SU 149. Measurements: diam. 120. thickness 2-6, length 25. *Terra Sigillata*. Production: Italic. Shape: Consp. 33. Rim. Outer and inner groove. Chronology: AD 10-40. Reference: Ettlinger *et al*. 1990: 110.

124 - Inv. no. AM-09-B-[149]-4 (Fig. 83)
Year 2009. SU 149. Measurements: diam. 150, thickness 3-3.5, length 26. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 18. Thickened rim. Inner groove. Chronology: AD 70-100. Reference: Passelac and Vernhet 1993: 571-580.

125 - Inv. no. AM-09-B-[149]-5 (Fig. 83)
Year 2009. SU 149. Measurements: thickness 4, length 25. *Terra Sigillata*. Production: Hispanic - La Rioja. Slightly curved wall. Small rosette and animals (?) under a thin scroll. Chronology: AD 70-100. Reference: Mayet 1984: 81.

126 - Inv. no. AM-09-B-[149]-1 (Fig. 83)
Year 2009. SU 149. Measurements: diam. 190, thickness 4.5-6, length 42. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 37a. Slightly marked rim and introverted wall. Large circle with animal (?) inside. Chronology: AD 70-100. Reference: Mayet 1984: 81.

127 - Inv. no. AM-09-B-[149]-25 (Fig. 83)
Year 2009. SU 149. Measurements: thickness 2, length 27. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 38. Carinated vessel. Barbotine decoration (one large and five small dots) on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

128 - Inv. no. AM-09-B-[151]-8 (Fig. 83)
Year 2009. SU 151. Measurements: diam. 100, thickness 3-3.5, length 18. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Thickened rim. Rouletted decoration on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

129 - Inv. no. AM-09-B-[151]-7 (Fig. 83)
Year 2009. SU 151. Measurements: diam. 100, Thickness 2-3, Length 18. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Thickened rim. Thin outer moulding. Chronology: AD 70-100. Reference: Mayet 1975: 72.

130 - Inv. no. AM-09-B-[151]-5 (Fig. 83)
Year 2009. SU 151. Measurements: thickness 2, length 29. Lamp. Production: *Baetica*. Discus. Victoria in frontal position. Chronology: AD 70-100. Reference: Rodríguez Martín 2002: 72.

131 - Inv. no. AM-09-B-[163]-2 (Fig. 83)
Year 2009. SU 163. Measurements: diam. 120, thickness 3-5, length 23. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 35. Rim. Hanging flange. Chronology: AD 70-100. Reference: Mayet 1984: 69.

132 - Inv. no. AM-09-B-[163]-5 (Fig. 83)
Year 2009. SU 163. Measurements: diam. 90, thickness 2-2.5, length 19. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Rim marked by an outer groove. Sandy decoration on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

133 - Inv. no. AM-11-B-[208]-2 (Fig. 83)
Year 2011. SU 208. Measurements: thickness 2.5, length 21. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 36 or 37. Rim marked by an outer groove. Rouletted decoration on the outer wall. Chronology: AD 70-100. Reference: Mayet 1975: 72.

134 - Inv. no. AM-11-B-[197]-2 (Fig. 84)
Year 2011. SU 197. Measurements: diam. 260, thickness 5-6, length 61. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 36. Rim. Hanging flange with barbotine water leaves on the top. Chronology: AD 70-100. Reference: Passelac and Vernhet 1993: 571-580.

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[6] Stamp]ICANI. Hofman (*s.d.*: 16) proposed a dating from AD 40-70, whereas Polak (2000: 233) has published a die [G]ALLICANI.MA, on Drag. 29, dated to AD 50-70. Genin (2007: 206) has proposed AD 40-70/80. Nevertheless none of these examples present similar dies, fact that makes too complicated the correct dating of the *Ammaia*'s stamp.

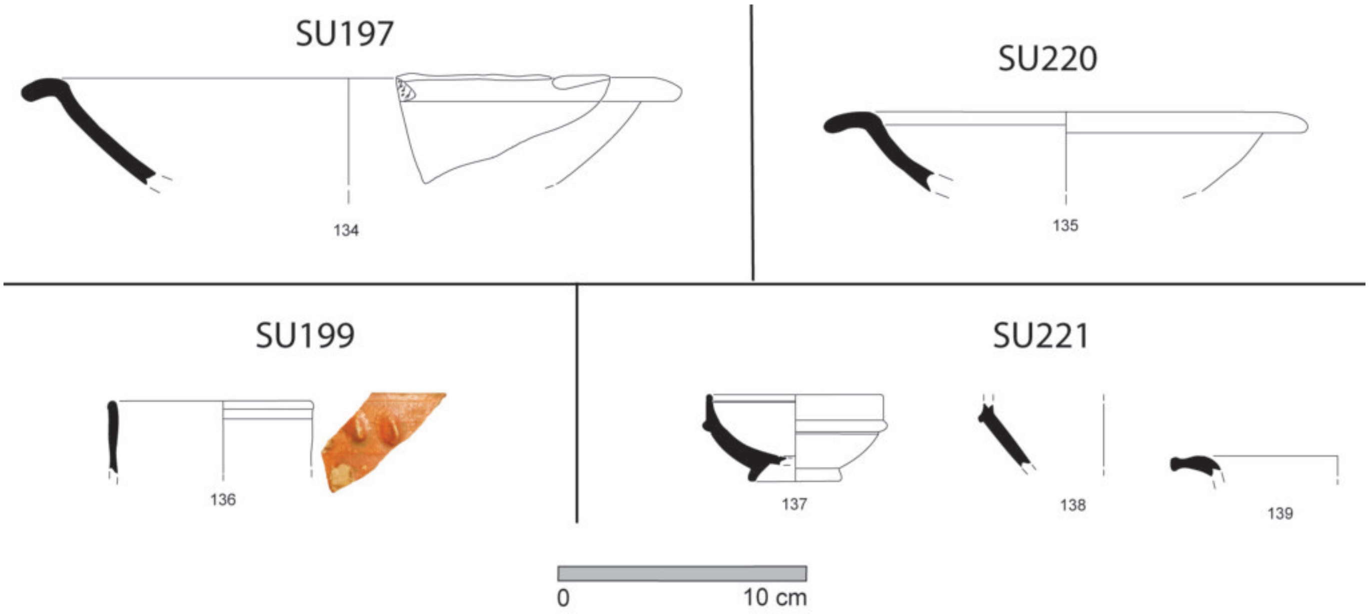

Fig. 84 *Ammaia*, Baths. Fine wares from the Flavian layers.

135 - Inv. no. AM-11-B-[218]-14 + [220]-1 (Fig. 84)
Year 2011. SU 218. Measurements: diam. 195, thickness 5-5,5, length 46. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 36. Rim. Hanging flange. Chronology: AD 70-100. Reference: Mayet 1984: 69.

136 - Inv. no. AM-11-B-[199]-2 (Fig. 84)
Year 2011. SU 199. Measurements: diam. 90, thickness 2-2.5, length 27. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Slightly thickened rim. Barbotine decoration on the outer wall (dots). Chronology: AD 70-100.
Reference: Mayet 1975: 72.

137 - Inv. no. AM-11-B-[221]-4 (Fig. 84)
Year 2011. SU 221. Measurements: diam. 70, height. 32, thickness 2.5-4.5, *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Rim with inner groove.Chronology: AD 40-100. Reference: Passelac and Vernhet 1993: 571-580.

138 - Inv. no. AM-11-B-[221]-2 (Fig. 84)
Year 2011. SU 221. Measurements: diam. 100, thickness 4, length 30. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 5c. Wall with thickened carina. Chronology: AD 30-50. Reference: Passelac and Vernhet 1993: 571-580.

139 - Inv. no. AM-11-B-[221]-5 (Fig. 84)
Year 2011. SU 221. Measurements: diam. 130, thickness 2.5-4, length 19. *Terra Sigillata*. Production: South-Gaulish. Shape: Service D1. Thickened horizontal rim with curve connection to the wall. Chronology: AD 70-100. Reference: Passelac and Vernhet 1993: 577-580.

140 - Inv. no. AM-09-B-[112]-58. AM_PH_111_SU112 (Fig. 85)
Year 2009. SU 112. Measurements: thickness 2-2.5, length 47. Lamp. Production: *Hispania*. Group 2b (Brown-orange clay). Shape: discus-type. Discus. Rounded shoulder separated from the discus by a groove. Decoration: Vegetal sequence on the discus. Chronology: AD 225-275. Reference: Bailey 1988: Q2541, Q2943; Casas i Genover and Soler i Fusté 2006, no. E803.

141- Inv. no. AM-09-B-[112]-59 (Fig. 85)
Year 2009. SU 112. Measurements: width 75, thickness 2-3, length 54. Lamp. Production: *Augusta Emerita*. Shape: discus. Largely preserved lamp. Rounded shoulder separated from the discus by a groove. Potter stamp on the outer bottom. Potter GABINIA[7]. Biga on the discus. Chronology: AD 70-150. Reference: Celis Betriu 2005, fig. 15. Casas i Genover and Soler i Fusté 2006: 350, E1134: 212, E273.

142 - Inv. no. AM-11-B-[218]-18 + 19. AM_PH_112_SU218 (Fig. 85)
Year 2009. SU 218. Measurements: height 31, thickness 2.5-4, length 55. Lamp. Production: *Hispania*. Group 2c. Shape: Dr. 28. Slightly rounded shoulder. A large moulding between the shoulder and the discus. Grape sequence on the shoulder. Vegetal decoration on the discus. Chronology: AD 225-275. Reference: Bussière 2000: 110.

143 - Inv. no. AM-09-B-[110]-7 + [152]-? (Fig. 85)
Year 2009. SU 110. Measurements: diam. 300, thickness 5-8,

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[7] GABINIA's die presents a clear over-moulding. In spite of the fact that the last letter doesn't seem to be an A, and even the precedent letter - I - seems to be deformed, this reading it fits properly with the average dies of this potter (Celis Betriu 2005: fig. 15, no. 109).

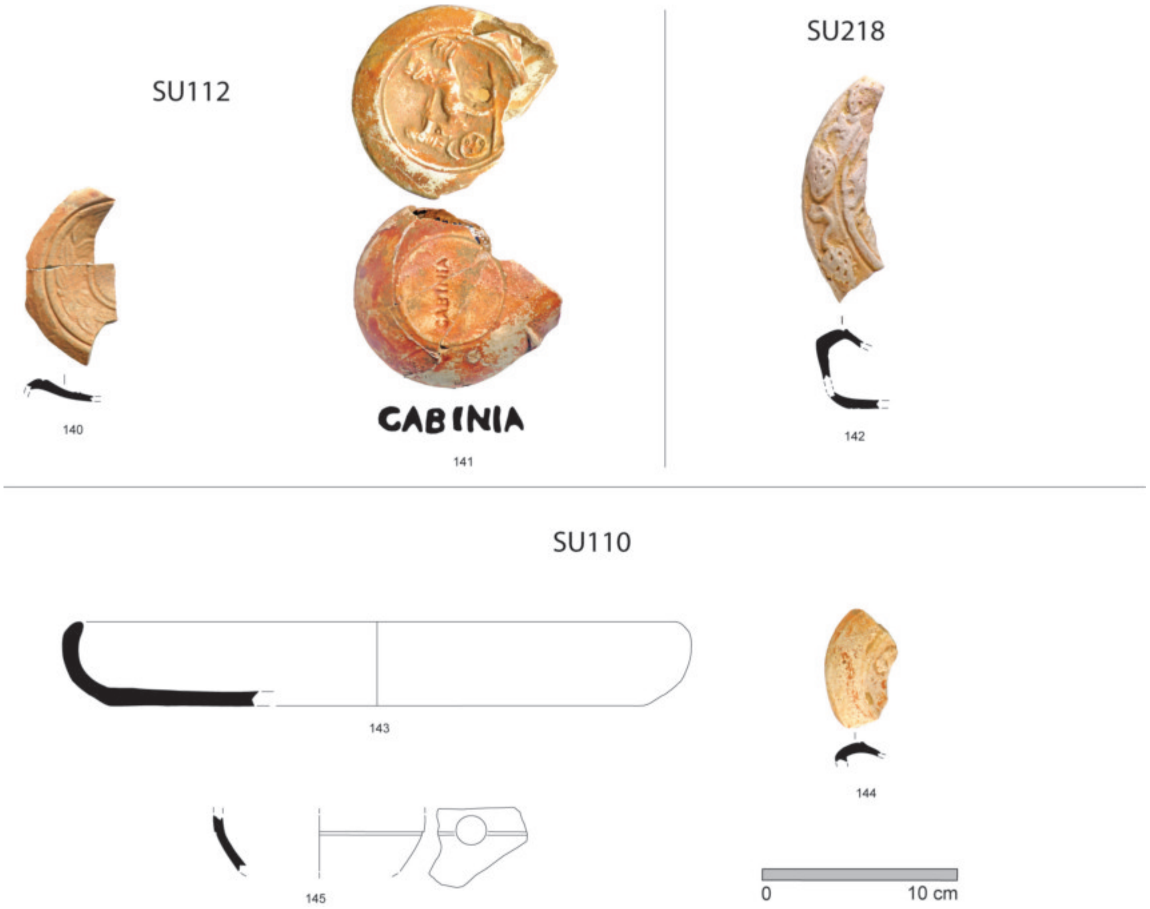

Fig. 85 *Ammaia*, Baths. Fine wares AD 225-275.

length 80. African cooking ware. Production: Northern Tunisia. Shape: Hayes 181B. Rim, rounded wall and flat bottom. Chronology: AD 200-300. Reference: Bonifay 2004: 214.

144 - Inv. no. AM-09-B-[110]-35. AM_PH_113_SU110 (Fig. 85)
Year 2009. SU 110. Measurements: thickness 2.5-3, length 32. Lamp. Production: *Augusta Emerita*. Shape: discus. Rounded, simplified shoulder separated from the discus by a groove. Over-moulding. Chronology: AD 50-250. Reference: Bussière 2000: 30.

145 - Inv. no. AM-09-B-[110]-10 (Fig. 85)
Year 2009. SU 110. Measurements: thickness 3-3.5, length 25. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Hisp. 2. Slightly carinated wall with a groove Barbotine decoration (dot) on the carina. Chronology: AD 70-200. Reference: Mayet 1984: 69.

146 - Inv. no. AM-03-B-[cond.]-19. AM_PH_114 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2, length 42. Lamp. Production: *Hispania*. Group 1a (Grey clay). Shape: Volutes-type. Angular shoulder separated from the discus by three grooves. Over-moulding. Chronology: AD 50-150. Reference: Bussière 2000: 22.

147 - Inv. no. AM-08-B-[0]-50. AM_PH_115 (Fig. 86)
Year 2008. SU 0. Measurements: thickness 1.5-4, length 46. Lamp. Production: *Hispania*. Group 2c. Shape: Volutes-type. Horizontal shoulder separated from the discus by a groove. Over-moulding. Rose-white clay. Chronology: AD 50-150. Reference: Bussière 2000: 22.

148 - Inv. no. AM-03-B-[cond.]-24. AM_PH_116 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 1.5-4, length 30. Lamp. Production: *Hispania*. Group 1b (Grey clay. Orange surface). Shape: Volutes-type. Rounded shoulder with volute separated from the discus by a groove. Chronology: AD 50-150. Reference: Bussière 2000: 22.

149 - Inv. no. AM-03-B-[cond.]-33. AM_PH_117 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 1.5-3.5, length 54. Lamp. Production: *Hispania*. Group 1b (Grey clay. Orange surface). Shape: discus-type. Oblique shoulder separated from the discus by a groove. Over-moulding. Vegetal motif on the discus. Chronology: AD 50-250. Reference: Bussière 2000: 28.

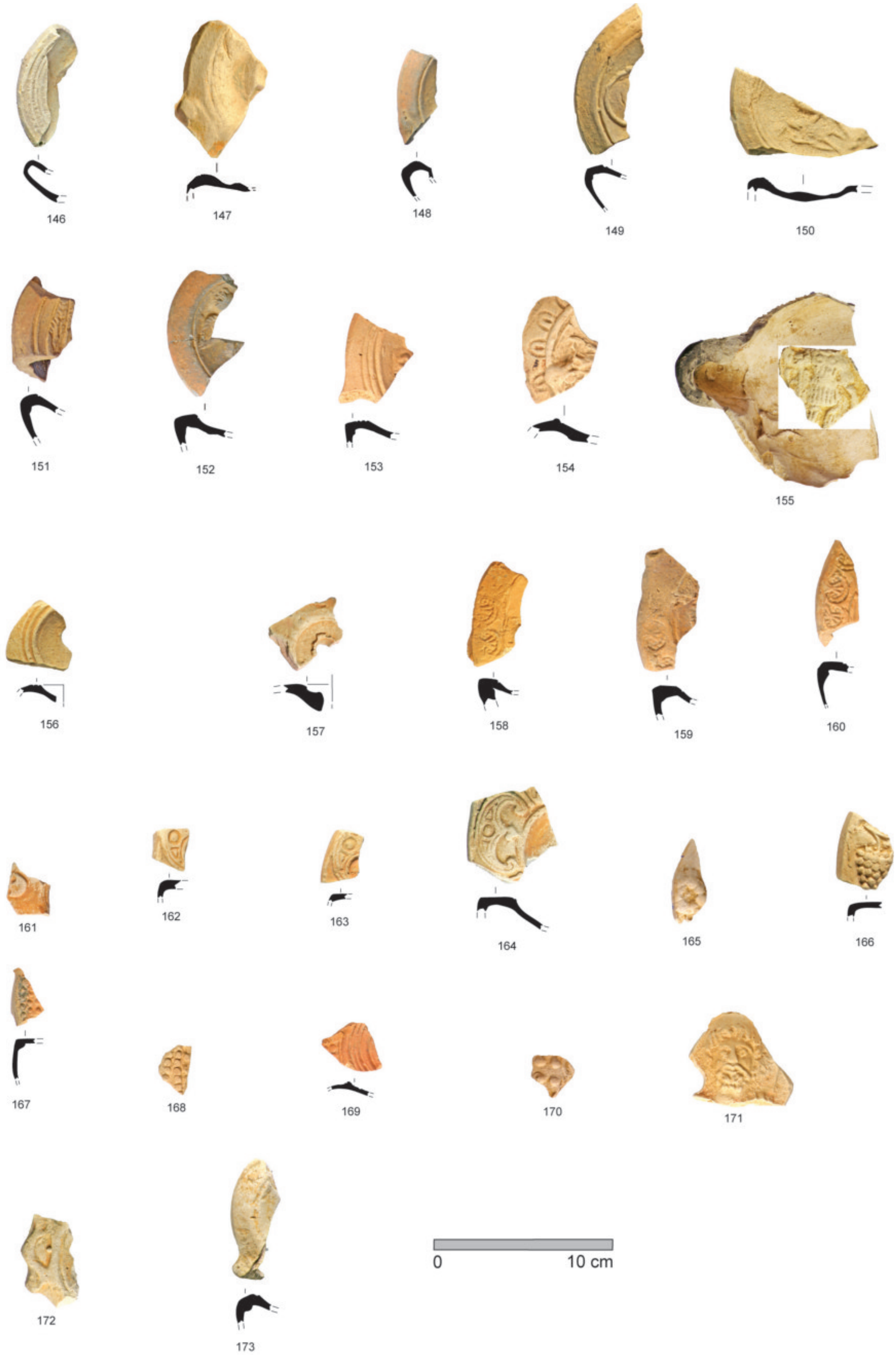

Fig. 86 *Ammaia*, Baths. Fine wares of fifth century AD.

150 - Inv. no. AM-03-B-[cond.]-28. AM_PH_118 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2-4, length 52. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: discus-type. Rounded shoulder. Over-moulding. Shallow discus with vegetal motif. Chronology: AD 100-250. Reference: Bussière 2000: 28.

151 - Inv. no. AM-08-B-[69]-150. AM_PH_119_SU69 (Fig. 86)
Year 2008. SU 69. Measurements: thickness: 2.5-6, length 34. Lamp. Production: *Hispania*. Group 1a (Grey clay). Shape: discus-type. Slightly rounded shoulder separated from the discus by a groove. Vegetal motif on the discus. Chronology: AD 50-250. Reference: Bussière 2000: 28.

152 - Inv. no. AM-08-B-[86]-123. AM_PH_120_SU86 (Fig. 86)
Year 2008. SU 86. Measurements: thickness 2.5-5, length 43. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: discus-type. Oblique shoulder. Deep discus with a lizard. Chronology: AD 50-250. Reference: Casas i Genover and Soler i Fusté, 2002: no. E622: 264.

153 - Inv. no. AM-09-B-[152]-117. AM_PH_121_SU152 (Fig. 86)
Year 2009. SU 152. Measurements: thickness 2.5-4, length 29. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: discus-type. Oblique shoulder separated from the discus by three grooves. Chronology: AD 100-250. Reference: Bussière 2000: 28.

154 - Inv. no. AM-09-B-[152]-114. AM_PH_122_SU152 (Fig. 86)
Year 2009. SU 152. Measurements: thickness 2.5-4, length 35. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dr. 16 / Den. 5D. Oblique shoulder separated from the discus by a moulding. Over-moulding. Ovules on the shoulder. Vegetal motif on the discus? Chronology: AD 100-150. Reference: Bussière 2000: 28.

155 - Inv. no. AM-09-B-[152]-s/n inv. AM_PH_123_SU152 (Fig. 86)
Year 2009. SU 152. Measurements: thickness 2-4, length 66. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dr. 20. Bottom and rounded noozle. Men's abdomen on the discus. Overmoulding. Chronology: AD 100-250. Reference: Bussière 2000: 28.

156 - Inv. no. AM-03-B-[cond.]-31. AM_PH_124 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2-2.5, length 34. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: discus-derived type. Rounded shoulder separated from the narrow discus by two grooves. Chronology: AD 150-450. Reference: Bussière 2000: 30.

157 - Inv. no. AM-03-B-[cond.]-18. AM_PH_125 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 3-7, length 36. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: discus-derived type. Rounded shoulder. Narrow discus. Chronology: AD 150-450. Reference: Bussière 2000: 30.

158 - Inv. no. AM-03-B-[cond.]-26. AM_PH_126 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 1.5-5, length 35. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 28. Oblique shoulder. Over-moulding. Impressed geometric motif on the oblique shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30.

159 - Inv. no. AM-08-B-[86]-122. AM_PH_127_SU86 (Fig. 86)
Year 2008. SU 86. Measurements: thickness 2.5-4, length 42. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 28. Horizontal shoulder. Over-moulding. Impressed geometric motif on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30.

160 - Inv. no. AM-09-B-[152]-98. AM_PH_128_SU152 (Fig. 86)
Year 2009. SU 152. Measurements: thickness 1.5-4, length 37. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 28. Horizontal shoulder. Over-moulding. Impressed geometric motif on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30.

161 - Inv. no. AM-09-B-[152]-166. AM_PH_129_SU152 (Fig. 86)
Year 2009. SU 152. Measurements: thickness 2-3, length 13. Lamp. *Hispania*. Group 1c (Grey clay. Orange surface). Shape: Dr. 28. Horizontal shoulder. Small geometric motif on the shoulder. Chronology: AD 200-300. Reference: Rodríguez Martín 2002: pl. XX, no. 19.

162 - Inv. no. AM-03-B-[cond.]-34. AM_PH_130 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2-4, length 11. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: Dr. 28. Horizontal shoulder. Large geometric motif on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30, no. 3628.

163 - Inv. no. AM-03-B-[cond.]-35. AM_PH_131 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2.5, length 18. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: Dr. 28. Horizontal shoulder. Large geometric motif on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30, no. 3628.

164 - Inv. no. AM-03-B-[cond.]-36. AM_PH_132 (Fig. 86)
Year 2003. channel (old excavations). Measurements: thickness 2.5-4, length 33. Lamp. Production: *Hispania*. Group 1c (Grey clay. Orange surface). Shape: Dr. 28. Horizontal shoulder. Large geometric motif on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 30, no. 3628.

165 - Inv. no. AM-09-B-[152]-149. AM_PH_133_SU152 (Fig. 86) Year 2009. SU 152. Measurements: thickness 2-4, length 29. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dr. 28. Horizontal shoulder. Rosette on the shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 110.

166 - Inv. no. AM-03-B-[cond.]-29. AM_PH_134 (Fig. 86) Year 2003. channel (old excavations). Measurements: thickness 2.5, length 37. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dr. 28. Horizontal shoulder. Grape on the horizontal shoulder. Chronology: AD 200-300. Reference: Bussière 2000: 110.

167 - Inv. no. AM-08-B-[86]-132. AM_PH_135_SU86 (Fig. 86) Year 2008. SU 86. Measurements: thickness 2.5-3, length 19. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 30. Horizontal shoulder with carina between the shoulder and the wall. Three dots lines on the shoulder. Chronology: AD 150-450. Reference: Bussière 2000: 30.

168 - Inv. no. AM-08-B-[86]-132. AM_PH_136_SU86 (Fig. 86) Year 2008. SU 86. Measurements: thickness 2, length 16. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 30. Horizontal shoulder. Three dots lines on the shoulder. Chronology: AD 150-450. Reference: Bussière 2000: 30.

169 - Inv. no. AM-09-B-[152]-178. AM_PH_137_SU152 (Fig. 86) Year 2009. SU 152. Measurements: thickness 2-3, length 21. Lamp. Production: *Hispania*. Group 2b (Orange brown clay). Shape: Dr. 30. Shoulder. Four grooves between the shoulder and the discus. Two dots lines on the shoulder. Chronology: AD 150-450. Reference: Bussière 2000: 30.

170 - Inv. no. AM-09-B-[152]-129. AM_PH_138_SU152 (Fig. 86) Year 2009. SU 152. Measurements: thickness 2, length 13. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Shape: Dr. 30. Shoulder. Four grooves between the shoulder and the discus. Two dots lines on the shoulder. Chronology: AD 150-450. Reference: Bussière 2000: 30.

171 - Inv. no. AM-08-B-[86]-95. AM_PH_139_SU86 (Fig. 86) Year 2008. SU 86. Measurements: thickness 2-4, length 38. Lamp. Production: *Hispania*. Group 2a (Whitish clay). Discus with over-moulding. Triumphal Jupiter and eagle with open wings. Chronology: AD 100-450. Reference: Rodríguez Martín, 2002: 44, fig. I, no. 4-5.

172 - Inv. no. AM-03-B-[cond.]-38. AM_PH_140 (Fig. 86) Year 2003. Channel (old excavations). Measurements: thickness 2-5, length 30. Lamp. Production: *Augusta Emerita*. Shape: Den. 5G. Shoulder with lateral moulding separated from the

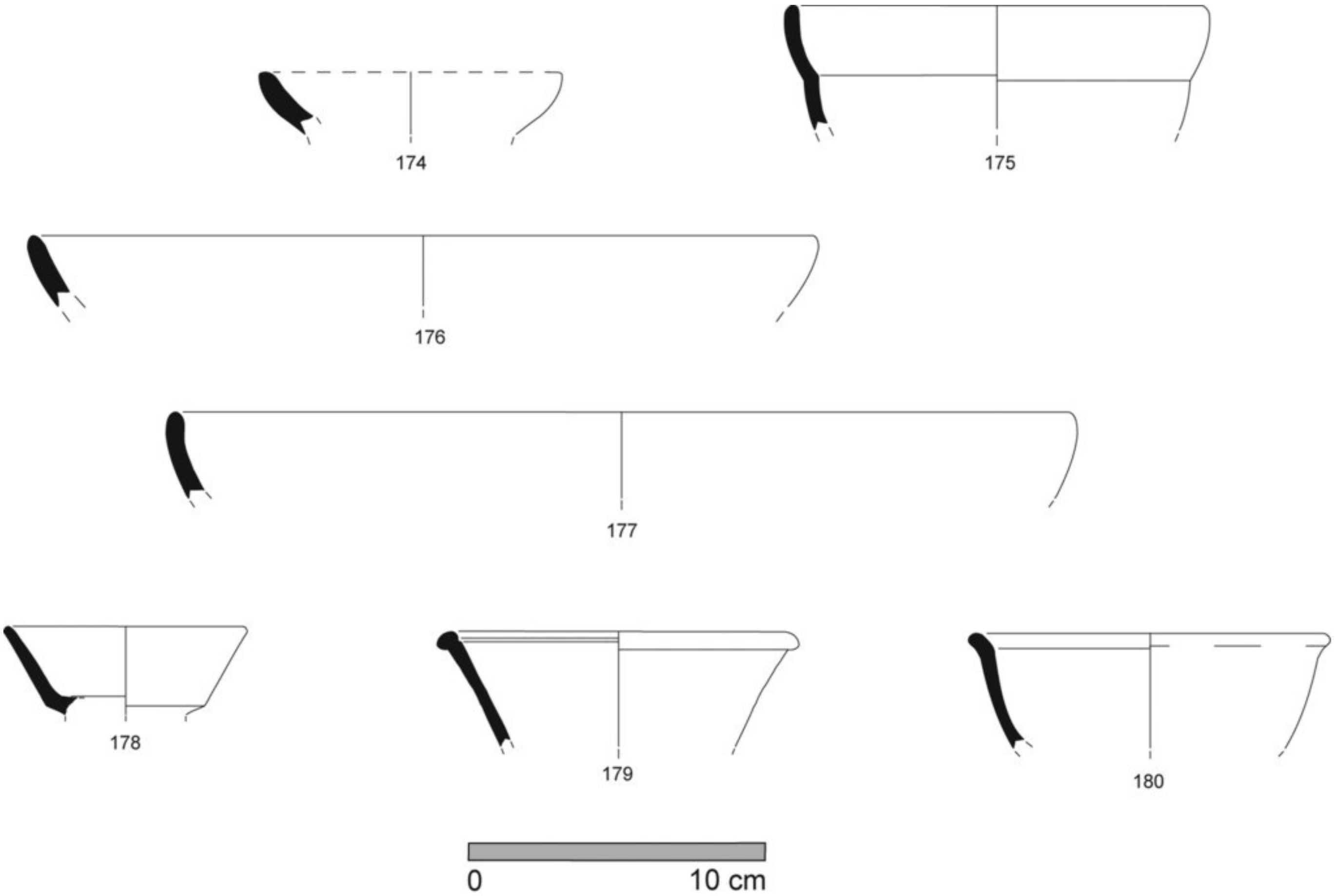

Fig. 87 *Ammaia*, Baths. Fine wares of fifth century AD.

discus by a groove. Over-moulding. Chronology: AD 70-125. Reference: Bussière 2000: 22-28.

173 - Inv. no. AM-03-B-[cond.]-37. AM_PH_141 (Fig. 86)
Year 2003. Channel (old excavations). Measurements: thickness 3-5, length 42. Lamp. Production: *Augusta Emerita*. Whitish clay. Shape: discus-type. Rounded shoulder separated from the discus by a groove. Over-moulding. Chronology: AD 40-100. Reference: Bussière 2000: 22.

174 - Inv. no. AM-03-B-[cond.]-3. AM_PH_142 (Fig. 87)
Year 2003. channel (old excavations). Measurements: diam. 100, thickness 7, length 24. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 27. Rounded rim. Chronology: AD 50-200. Reference: Mayet 1984: 69.

175 - Inv. no. AM-03-B-[cond.]-4 (Fig. 87)
Year 2003. Channel (old excavations). Measurements: diam. 140, thickness 7, length 45. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 27. Rounded rim. Developed shape. Chronology: AD 50-200. Reference: Mayet 1984: 69.

176 - Inv. no. AM-03-B-[cond.]-1 (Fig. 87)
Year 2003 . Channel (old excavations). Measurements: diam. 260, thickness 6, length 20. *Terra Sigillata*. Production: African A/D. Shape: Hayes 31. Rounded rim. Chronology: AD 200-300. Reference: Hayes 1972: 32-56.

177- Inv. no. AM-08-B-[69]-89 (Fig. 87)
Year 2008. SU 69. Measurements: diam. 300, thickness 6, length 29. *Terra Sigillata*. Production: Hispanic. «Precoce». Shape: Type III of Martínez Rodríguez 1989 Rounded rim. Chronology: AD 40?-100. Reference: Martínez Rodríguez 1989: 60-65.

178- Inv. no. AM-09-B-[152]-78 (Fig. 87)
Year 2009. SU 152. Measurements: diam. 80, thickness 4-5, length 36. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 33. Rim and oblique wall. Chronology: AD 40-100. Reference: Mayet 1984: 45.

179- Inv. no. AM-08-B-[86]-73 (Fig. 87)
Year 2008. SU 86. Measurements: diam. 120, thickness 5-6, length 45. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Hisp. 10. Oblique wall and rim with hanging lip and a groove in the inner wall. Chronology: AD 70-200. Reference: Mayet 1984: 5.

180- Inv. no. AM-03-B-[cond.]-10 (Fig. 87)
Year 2003. Channel (old excavations). Measurements: diam. 120, thickness 5-5,5, length 46. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Aj. 3. Extroverted rim marked by an inflexion of the profile. Chronology: AD 70-200. Reference: Roca Roumens and Fernández García 1999: 27.

II.7 THE COARSE WARE

Vítor Silva Dias

We present here only the data considered relevant for publication, information recorded and archived in a database, according to the following order: inventory number; year; provenience; measurements (diameter, exterior rim/base; diameter interior rim/base; height); fabric; fabric colour; morphological category; group; description; decoration; general chronology; references.

For the encoding of colours, we refer to Munsell 1994. As most fragments present different characteristics, the catalogue includes different details and items where necessary. Dimensions are given in centimetres.

For fabric description see chapt. V.4.

AMM1996B266 (Fig. 88, a)
Year 1996. Provenience: s. 1209. Measurements: 23; 21.3; 4.7. fabric: H1; colour: GLEY 1 5/10Y; morphological category: II. Deep plate; group: table ware.
Straight rim without inflection; open shape; straight lip; General chronology: Early Empire.
References: Nolen 1985b: pl. XXVIII, nº 226; Aguarod Otal 1991: 203 (close to shape 4 Vegas 14).

AMM1996B350 (Fig. 88, b)
Year: 1996. Provenience: s. 1209. Measurements: 18; 14.2; 2.2; fabric: G; colour: 5YR 6/6; morphological category: VII. Saucepan. Group: cooking ware.
Everted rim with horizontal lip folded over shoulder; closed shape; roundish lip; rim and exterior wall with traces of firing.

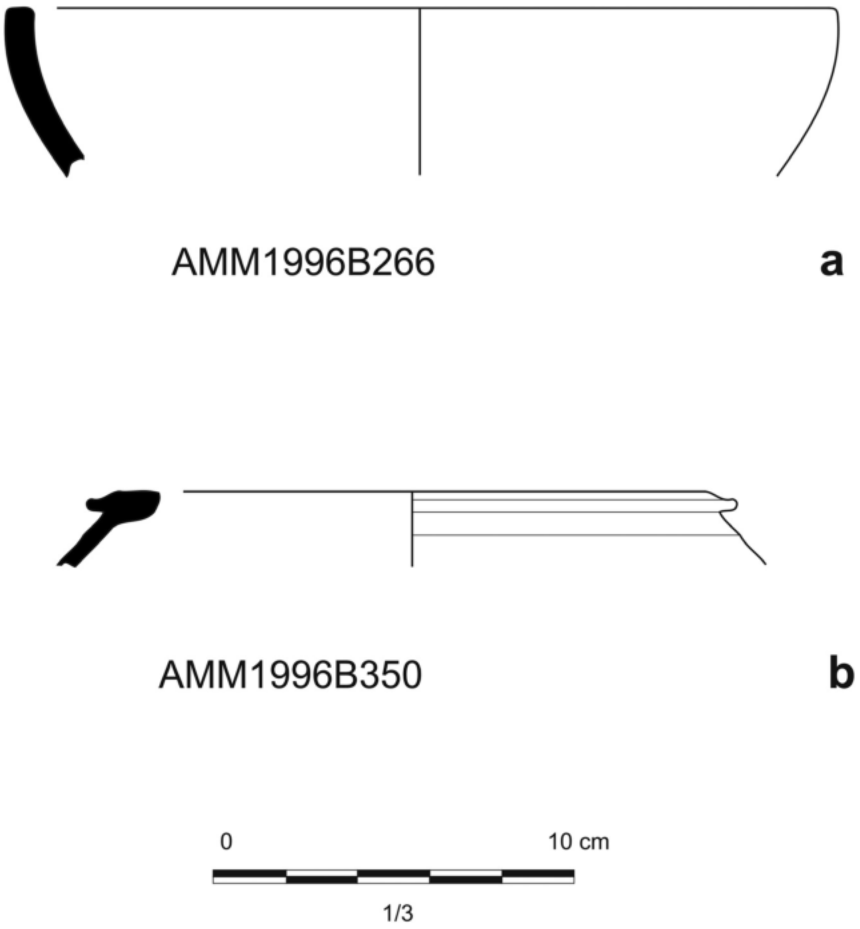

Fig. 88 *Ammaia*, Baths. Deep plate and saucepan.

II.8 THE AMPHORAE

Caterina P. Venditti

The data are presented here according to the following order: inventory number, object, provenience, dimensions, description, production, contents, fabric colour, fabric description, date-range, references.

The inventory number is composed on the basis of the: location (AMM), year (0000), sector (B), square (0000), internal progressive number. For the encoding of colours, we refer to Munsell 1994. Dimensions are given in centimetres.

Excavations 1996

AMM1996B1209.29 Shoulder (Fig. 89)
Provenience: s. 1209. Wall thickness 0.9. Part of the shoulder and attack on the handle (ovoid-shaped?). Production: Tejo/Sado valleys (?). Fabric colour: core 7.5YR6/8; ext. surf. 7.5YR6/8. Visual characteristics: hard-fired, rough fabric, with irregular both fracture and texture. Abundant and variable size inclusions: on the external surface abundant sub-rounded large and medium-size grey grains and abundant sub-rounded and rounded medium-size brown inclusions; white sub-angular inclusions (limestone?).

AMM1996B1209.30 Rim and attack of the handle (Fig. 90)
Provenience: s. 1209. Diameter 10.6; max height 5.6; wall thickness 0.8. Thickened rim in the form of a collar around a short neck, attack of the handle joined down the rim. Two fragments reassembled. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 7.5YR6/6; ext. surf. 7.5YR5/6. Visual characteristics: hard-fired fabric, smooth feel, with clear fracture and fine texture. Moderate frequency of well assorted and variable size (0.5 to 1.0 mm) inclusions: small grains of white elements; medium size red-brown rounded grains and brown ill-sorted inclusions, small white sub-rounded grains (limestone?). Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

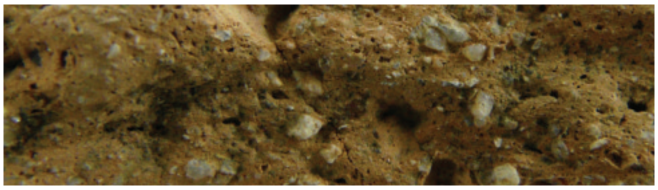

Fig. 89 No. inv. AMM1996B1209.29: the fabric.

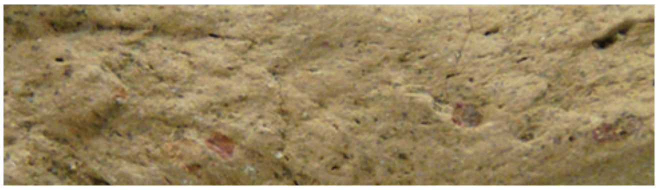

Fig. 90 No. inv. AMM1996B1209.30: the fabric.

Excavations 1997

AMM1997B1209.67 Shoulder and attack of the handle (Fig. 91)
Provenience: s. 1209. Handle thickness 1.5, width 5.2. Shoulder and part of the handle, ovoid-shaped, with one deep groove in the centre. Three fragments reassembled. Production: local production (?). Fabric colour: core dark orange; ext. surf. dark orange. Visual characteristics: hard-fired, rough feel, coarse fabric, containing frequent and variable size inclusions: abundant and large sub-angular white grains of limestone, abundant grey and brown grains.

Excavations 2001

AMM2001B1109.1 Rim and part of the handle (Fig. 92)
Provenience: s. 1109. Diameter 9; max height 3.5; handle thickness 1.3, width 3.5-4. Triangular-shaped rim and attack of ovoid-shaped handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish products. Fabric colour: core pale pink; ext. surf. cream. Visual characteris-

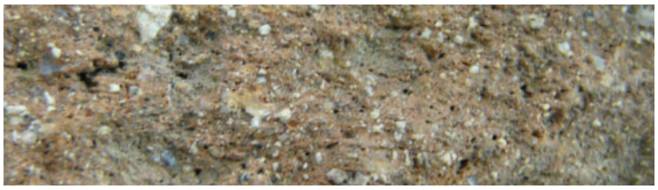

Fig. 91 No. inv. AMM1997B1209.67: the fabric.

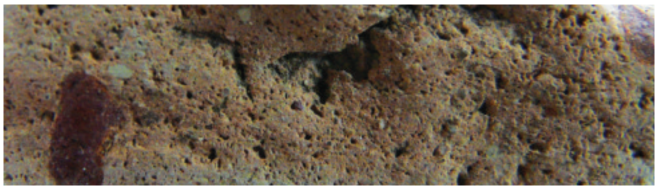

Fig. 92 No. inv. AMM2001B1109.1: the fabric.

tics: hard, rough fabric with flaked fracture, coarse-grained texture with tube-shaped split. Abundant, ill-sorted small-size inclusions of quartz and mica, dark-red grains, limestone, grey grains. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM2001B1110.4 Handle (Fig. 93)
Provenience: s. 1110. Wall thickness 0.7; handle thickness 1.3, width 4.7. Attack and part of handle with a single narrow groove in the centre. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core pale orange; ext. surf. beige/cream. Visual characteristics: hard, rough fabric with irregular fracture. Abundant, ill-sorted small and medium-size inclusions of quartz and limestone, and grey, brown, red and black elements. Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

AMM2001B1209.5 Rim (Figs. 94, 95)
Provenience: s. 1209. Diameter 14. Triangular thickened rim in the form of a collar around the neck. Horizontal groove above the rim. Two fragments reassembled. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core red/brown; ext. surf. red/brown. Visual characteristics: hard, rough fabric with irregular fracture. Abundant, ill-sorted small and medium-size inclusions of sub-angular white grains (limestone?), and grey and black elements. Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

AMM2001B1209.6 Rim and part of the neck (Fig. 96)
Provenience: s. 1209. Diameter 15.2; wall thickness 0.9-0.7. Thickish beaded rim, with a simple rounded lip and part of the wide neck. Classification: Dressel 14 (late variant). Production: Tejo/Sado valleys. Contents: fish-based products. Fabric colour: core pale brown/yellow; ext. surf. pale brown/yellow. Visual characteristics: hard, rough sandy fabric with irregular fracture. Abundant, ill-sorted small and medium-size inclusions of red, brown, grey and limestone elements. Date range: Claudian period - early third century AD. References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Mayet 1990: *passim;* Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim*, 2008: *passim*; Raposo and Viegas 2013.

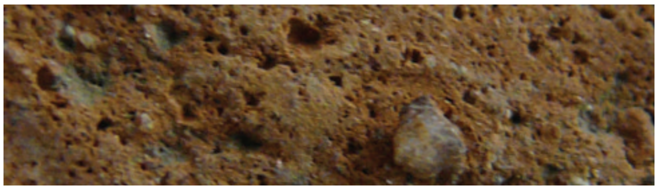

Fig. 93 No. inv. AMM2001B1110.4: the fabric.

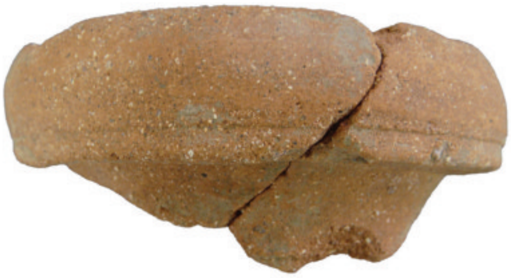

Fig. 94 Two fragments reassembled of a triangular thickened rim of Lusitana 3 (no. inv. AMM2001B1209.5).

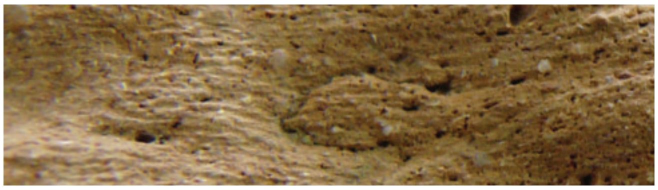

Fig. 95 No. inv. AMM2001B1209.5: the fabric.

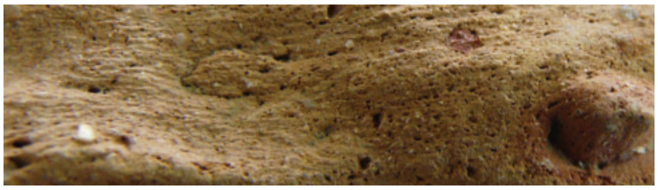

Fig. 96 No. inv. AMM2001B1209.6: the fabric.

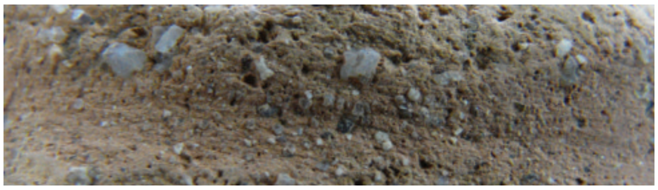

Fig. 97 No. inv. AMM2001B1309.7: the fabric.

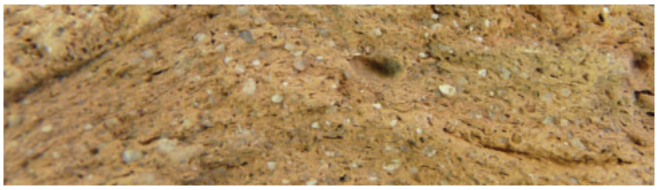

Fig. 98 No. inv. AMM2001B1110.8: the fabric.

AMM2001B1309.7 Base (Fig. 97)
Provenience: s. 1309. Diameter 8; max height 2.3. Ringed base. Production: Guadalquivir valley. Fabric colour: core

grey; ext. surf. pale orange/yellow/red. Visual characteristics: hard, rough coarse fabric with irregular fracture. Abundant, ill-sorted large and medium-size inclusions of grey and limestone elements. Abundant sub-angular white inclusions.

AMM2001B1110.8 Rim (Fig. 98)
Provenience: s. 1110. Vertical thickened rim with a thin horizontal groove. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: pale orange/cream; ext. surf. pale orange/yellow. Visual characteristics: hard-fired fabric, rough feel. Abundant frequency of well assorted and variable size (0.5 to 1.0 mm) inclusions: small grains of white elements; medium-size red-brown rounded grains and brown ill-sorted inclusions, small-size white sub-rounded grains (limestone ?). Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

AMM2001B1109.9 Rim (Fig. 99)
Provenience: s. 1109. Diameter 13; height 4.3; wall thickness 0.8. Triangular rim, noticeably thickened in the form of a collar around the neck. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: pale orange/cream; ext. surf. pale orange/yellow. Visual characteristics: hard-fired fabric, rough feel. Abundant frequency of inclusions: small-size grains of white elements; medium-size red-brown rounded grains and brown ill-sorted inclusions, small-size white sub-rounded grains (limestone?). Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

AMM2001B1109.10 Rim (Fig. 100)
Provenience: s. 1109. Height 5; wall thickness *c.* 6. Everted rim and attack of the ovoid-shaped handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish products. Fabric colour: core brown (7.5YR 5/2); ext. surf. reddish/yellow (7.5YR 7/6). Visual characteristics: hard thick gritty fabric, with frequent inclusions protruding through the surfaces. Abundant white large-size sub-angular elements (limestone), abundant medium-size grey sub-angular grains and brown sub-rounded grains. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

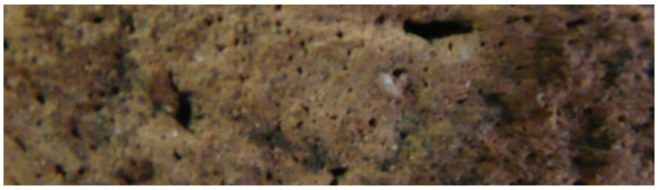

Fig. 99 No. inv. AMM2001B1109.9: the fabric.

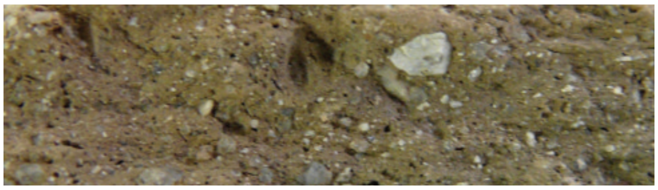

Fig. 100 No. inv. AMM2001B1109.10: the fabric.

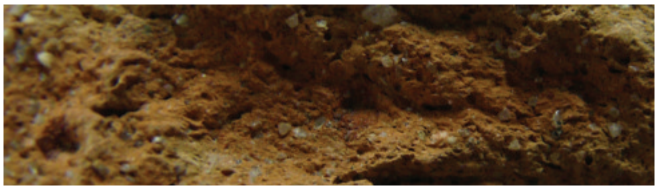

Fig. 101 No. inv. AMM2002B1310.3.

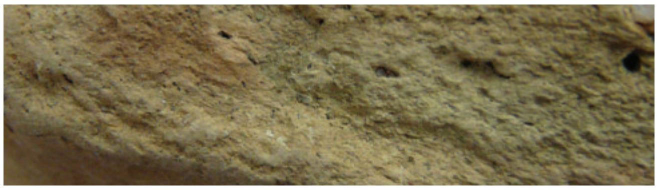

Fig. 102 No. inv. AMM2002B1209.8: the fabric.

Excavations 2002

AMM2002B1310.3 Rim (Fig. 101)
Provenience: s. 1310. Max height: 5.8; thickness 0.8 to 2.1. Everted collar rim. Classification: Haltern 70. Production: *Lusitania* ? Contents: *defrutum*. Date range: 80-60 BC - Antonine period (first century BC - second century AD). Fabric colour: core red/orange; ext. surf. beige, pale brown. Visual characteristics: hard, rough fabric, with regular fracture. Abundant, ill-sorted and variable size inclusions of quartz, sub-angular limestone and grey and brown elements. References: Peacock and Williams 1986: 115-116; Carreras Monfort 2003; Bustamante Álvarez and Cordero Ruíz 2013; Bustamante Álvarez and Heras Mora 2013b.

AMM2002B1109.4 Handle
Provenience: s. 1109. Thickness 1.2, width 4.6. Ovoid-shaped handle, probably broken near the attack of the rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys (?). Contents: fish products. Fabric colour: core orange; ext. surf. beige/yellow. Visual characteristics: hard, rough fabric, with irregular fracture. Abundant, ill-sorted and variable size inclusions of quartz, limestone and dark-red and brown ele-

ments. Date range: third - (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM2002B1209.8 Handle (Fig. 102)
Provenience: s. 1209. Thickness 1.5, width 5.1. Ribbon-shaped handle, with one longitudinal groove running down it. Classification: Almagro 51 c. Production: Tejo/Sado valleys (?). Contents: fish products. Fabric core: core pale grey/pink; ext. surf. beige. Visual characteristics: hard, smooth fabric, with regular fracture. Moderate, generally well-assorted and variable size inclusions of grey, brown and white elements; large grain of sub-angular limestone in the fracture. Date range: third - (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

Excavation 2003

AMM2003B1010.1 Rim and attack of the handle (Fig. 103)
Provenience: s. 1010. Diameter 8; max height 3.6; handle thickness 1.9, width 5.5. Description: Part of the rim, without lip, central groove and attack of ovoid-shaped handle. See no. inv. AMM1997.46. Classification: Almagro 51 A & B. Production: local production (?). Contents: fish products. Fabric colour: core dark red/orange; ext. surf. dark red/orange. Visual characteristics: hard, rough/harsh fabric, with irregular fracture. Abundant, generally well-assorted with variable size inclusions of limestone and grey and brown elements. Date range: (late) fourth - (mid) fifth century AD (?). References: Almagro Basch 1955; Beltrán Lloris 1970; Parker 1977: 35-40; Keay 1984: 156-168; Alarcão and Mayet 1990; Étienne 1990; Fabião 2004, 2005c; Pinto, Magalhães da Silva 2014.

AMM2003B1209.3 Handle
Provenience: s. 1209. Thickness 1.3, width 4.8. Long irregular section handle, with a longitudinal groove. See no. inv. AMM2002.B1209.8. Production: Tejo/Sado valleys (?). Fabric colour: core pale grey core, between two orange/pink sections; ext. surf. dark brown/orange. Visual characteristics: hard, smooth fabric, with regular fracture. Abundant, well-assorted variable size inclusions: grey and white grains, quartz.

AMM2003B1310.8 Handle
Provenience: s. 1310. Thickness 1.3, width 4.8. Long handle, irregular section, with a longitudinal groove. See no. inv. AMM2002.B1209.8. Production: Tejo/Sado valleys (?). Fabric colour: core pale grey core, between two orange/pink sections; ext. surf. dark brown/orange. Visual characteristics: hard, smooth fabric, with regular fracture. Abundant, well-assorted variable size inclusions: white and grey grains sub-rounded, limestone.

AMM2003B1110.9 Rim and attack of the handle (Fig. 104)
Provenience: s. 1110. Diameter 14.4; max height 3.6; handle thickness 1.1, width 3.5. Rim with everted lip and groove on the top; attack of a short ovoid-shaped handle with two grooves. Classification: Lusitana 9. Production: Sado valley. Contents: wine (or fish-based products). Fabric colour: core beige/orange; ext. surf. orange/yellow. Visual characteristics: hard, rough/harsh fabric, with regular fracture. Very abundant, ill-sorted variable size inclusions of quartz grains, limestone, dark-red and brown grains. Date range: third - (mid) fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM2003B1110.13 Handle
Provenience: s. 1110. Thickness 1.7, width 4. Ovoid-elliptic handle, with a single narrow groove, perhaps joined to the rim. Classification: Almagro 51 c. Production: Tejo valley (?). Contents: fish sauce. Fabric colour: core beige; ext. surf. beige/dark orange. Visual characteristics: hard, rough fabric. Moderate frequency of ill-sorted and variable size inclusions of limestone and grey, brown and red grains. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM2003B1009.16 Handle
Provenience: s. 1009. Thickness 1.4; width 4.4. Long ovoid-shaped handle, with a single narrow groove in the centre. Production: Tejo valley. Fabric colour: core grey/pale orange; ext. surf. yellow/cream. Visual characteristics: hard, rough fabric. Abundant frequency of ill-sorted and variable size inclusions: abundant subangular limestone, abundant grey, brown and red grains of variable roundness.

AMM2003B1009.17 Rim (Fig. 105)
Provenience: s. 1009. Diameter 9.2; height max 5.9. Rounded rim. Production: local production (?). Fabric colour: core red/brown; ext. surf. brown. Visual characteristics: very hard, rough-harsh fabric. Abundant frequency of ill-sorted and variable size inclusions: abundant sub-angular limestone, abundant grey, brown and red grains of variable roundness.

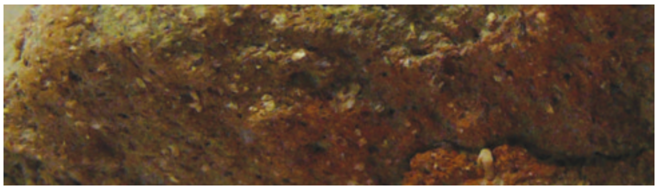

Fig. 103 No. inv. AMM2003B1010.1: the fabric.

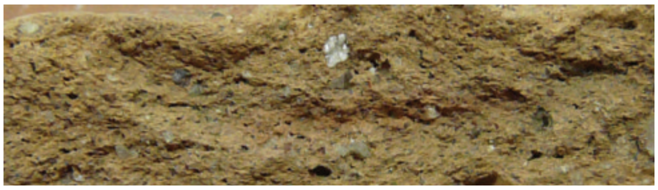

Fig. 104 No. inv. AMM2003B1110.9: the fabric.

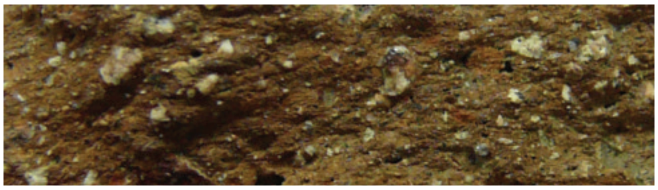

Fig. 105 No. inv. AMM2003B1009.17: the fabric.

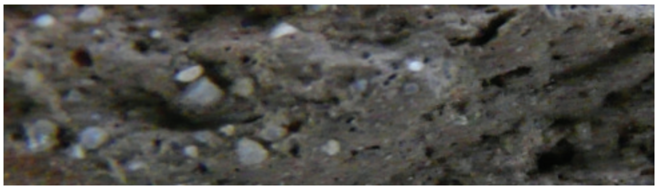

Fig. 106 No. inv. AMM2003B1009.24: the fabric.

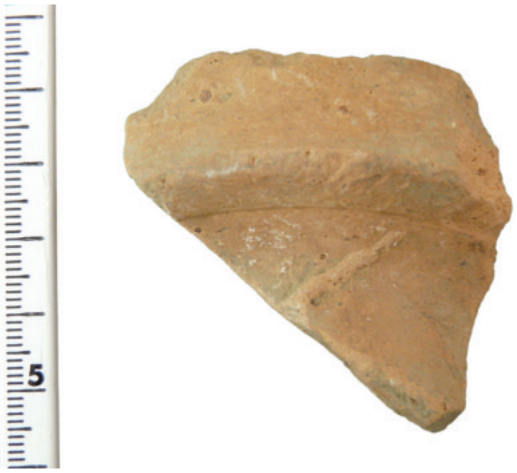

Fig. 107 Triangular rim, slightly sloping outwards, deep narrow at the attack of the neck of Lusitana 3 (no. inv. AMM2008B68.141).

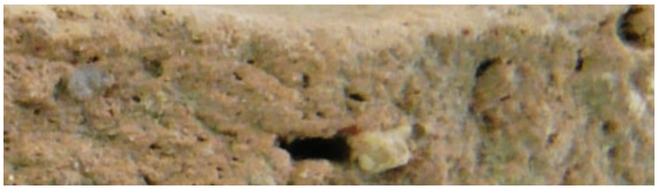

Fig. 108 No. inv. AMM2008B68.141: the fabric.

AMM2003B.18 Handle

Provenience: unknown. Thickness 1.3, width 4.5. Long irregular ovoid-shaped handle, perhaps broken near the rim, with a single narrow central groove. Production: local production (?). Fabric colour: core orange; ext. surf. cream. Visual characteristics: hard, rough fabric. Abundant frequency of ill-sorted large and medium-size inclusions of grains of quartz, limestone and grey and brown grains.

AMM2003B1009.23 Handle

Provenience: s. 1009. Thickness 1.6, width 4.8. Ovoid-shaped handle, with a single groove nearly the centre. Production: Sado valley. Fabric colour: core dark grey; ext. surf. pale orange/yellow. Visual characteristics: hard, rough/harsh fabric. Abundant frequency of ill-sorted variable size inclusions of grey, brown, white and dark-red grains.

AMM2003B1009.24 Rim and handle (Fig. 106)

Provenience: s. 1009. Diameter 7.6; height 3.9; handle thickness *c.*1.5, width 4.4. Triangular rim, ovoid-shaped handle with one or two grooves. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish products. Fabric colour: core grey; ext. surf. pale brown/yellow. Visual characteristics: hard, rough/harsh coarse fabric. On the external surface and in the core very abundant frequency of ill-sorted and variable size inclusions of quartz and grey, brown, white (limestone) and dark-red grains. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

Excavations 2008

AMM2008B68.141 Rim (Figs. 107, 108)

Provenience: *amb.* B, SU 68. Diameter *c.* 12; height 4.6, rim height 2.4; thickness 0.9. Triangular rim, slightly sloping outwards, deep narrow at the attack of the neck. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 7.5YR6/8; ext. surf. 10R4/10. Visual characteristics: hard, rough/harsh fabric. Sparse frequency of ill-sorted medium and small-size inclusions of quartz and grey, white and dark-red grains. Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Fabião 1997, 1998, 2005a, 2008; Mayet, Schmitt and Silva 1996; Quaresma and Raposo 2014.

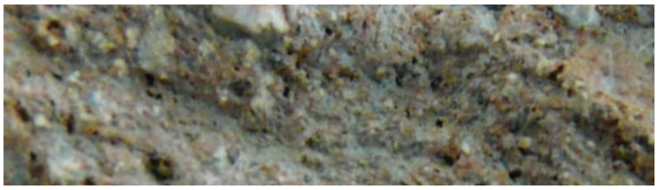

Fig. 109 No. inv. AMM2008B86.508: the fabric.

AMM2008B86.508 Rim (Fig. 109)
Provenience: *Amb.* D, SU 86. Diameter 8; height rim 2.4; wall thickness 0.9. Triangular rim. Classification: Lusitana 3. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 10R4/8; ext. surf. 10R4/10. Visual characteristics: hard, rough/harsh fabric, with irregular fracture. Abundant frequency of well-assorted variable size inclusions of quartz and black, grey, white and brown grains. Date range: (mid) first - (early) second/third century AD. References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

Excavation 2009

AMM2009B89.6 Handle
Provenience: *amb.* H, SU 89. Thickness 4, width 4.3 x *c.* 1.2. Curved handle with two grooves running down. Production: Tejo/Sado valleys (?). Fabric colour: core 10R4/12; ext. surf. 2.5YR5/10 2.5YR5/12. Visual characteristics: hard, rough/harsh fabric, with irregular fracture and abundant frequency of ill-sorted variable size inclusions of grey and white grains, limestone.

AMM2009B89.7 Handle
Provenience: *amb*. H, SU 89. Thickness *c.* 1.5, width 6. Ribbon-shaped handle, with elliptic section, and attack to the neck. Production: local production. Fabric colour: core 2.5Y4/4; ext. surf. 2.5YR4/10. Visual characteristics: hard, rough/harsh coarse fabric with very abundant frequency of ill-sorted and variable size inclusions: quartz, limestone and abundant grey, brown and white grains.

II.9 AS MOEDAS

José Ruivo

Para as notas introdutórias, os códigos de bustos e as abreviaturas ver cap. I.8.

Nº	*Busto*	*Reverso*	*Marca*	*Peso*	*Bibliografia*	*Referência*	*Fig.*

a A república

L. PAPIUS CELSUS IIIVIR
Roma
45 a.C.
Anv.: Busto de Vitória para a direita (Quinário)

41.	-	Ilegível; rapariga e serpente frente-a-frente		1,58	RRC 472/3	IX	Fig. 110

b O alto império

1. Período 27 a.C. - 68

AUGUSTO
Emerita
2 a.C.-14 d.C.
PE[RM IMP]CAESARIS A[VG P P] (Asse)

42.	A2	[AVGVSTA] EMERITA; sacerdote conduzindo junta de bois para a dta.		7,08	RPC 13	XVIII	Fig. 110

CLÁUDIO I
Cunhagem provincial
post 41
[TI CLAVDIVS] CAESAR [AVG P M TR P IMP](Asse/Dupôndio)

43.	A1e	Fruste		11,83	-	LXIII

JÚLIOS-CLÁUDIOS
Casa da moeda indeterminada
Anv.: Ilegível (Asse/Dupôndio)

44.	A5e?	Fruste		6,43	-	XVI

2. Período 96-192

LÚCIO VERO (para ÂNIA LUCILA) ou CÓMODO (para CRISPINA)
Roma
164-183 (?)
Anv.: Ilegível (Asse/Dupôndio)

45.	F1	[...] S [C]; tipo indeterminado (fig. fem. de pé, com lança ou ceptro)		8,29	-	XXXV

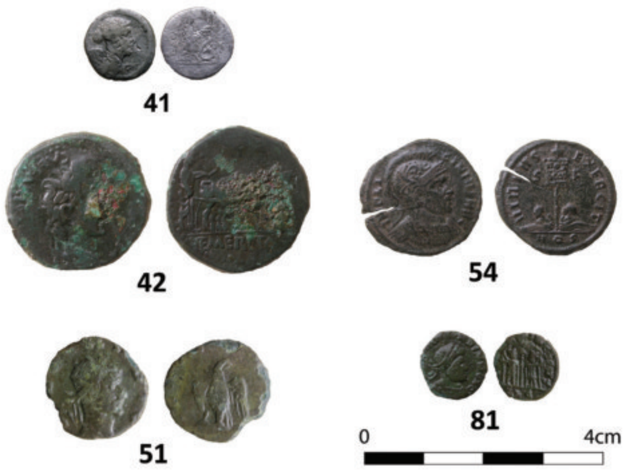

Fig. 110 *Ammaia*, Baths. Coins catalogue nos. 41, 42, 51, 54, 81.

c O século III

1. Período 260-294

CLÁUDIO II
Roma
Emissão II-III (final 268-269)
IMP [C] CLAVDIVS AVG (Antoniniano)

46.	A5	[GENIVS E]XERC[I]; Genius 1a	- -//-	1,82	cf. RIC V(1) 48-9	LXIV

[IMP (C) CL]AVD[IVS AVG] (Antoniniano)

47.	A5	Ilegível; fig. feminina para a esq. (Annona?)	- -//?	1,17	-	NV.04.107

Emissão II-IV (final 268-270)

[IMP (C)] CLAVDIVS AVG (Antoniniano)

48.	A5	Fruste		2,52	-	XXVI

DIVO CLAUDIO
Imitações
post 270
D[IVO CLAVDIO] (Antoniniano)

49.	A5	[CO]NS[ECRATIO]; Altar 1a		1,63	cf. RIC V (1) 261	LXV

DIVO CLAVDIO (Antoniniano)

50.	A5	CONSECR[ATIO]; Águia 2		1,47	cf. RIC V (1) 266	XXV

[DIVO] CLAVDIO (Antoniniano)

51.	A5	CONS[ECRATIO]; Águia 2		1,65	cf. RIC V (1) 266	XXXII	Fig. 110

2. Período 294-305

A TETRARQUIA
Constâncio Cloro
Cartago
c. 303
FL VAL CONSTANTIVS NOB C (Neoantoniniano)

52.	D8	VOT / X	FK//-	2,29	RIC VI 35a	XX

d O século IV

1. Período 305-330

Roma
312-313
IMP CONST[ANTINVS] P F AVG (*Follis*)

53.	C2	SPQR [OPTIMO]PRINCIPI; águia legionária entre 2 *vexilla*	- -//R[...]	2,71F	RIC VI 348a	XIII

Aquileia
320
IMP LI-CINIVS P F AVG (*Nummus*)

54.	E1	VIRTVS EXERCIT, VOT / XX	S F//AQS	2,34	RIC VII 51	XVII	Fig. 110

321
CRISPVS NOB CAES (*Nummus*)

55.	B1	[CAESARVM NOS]TRORVM, VOT / V	- -//[•A]QS	2,88	RIC VII 89	LX

2. Período 330-348

Lyon
337- a. Abril 340
[CONSTANT]IVS AVG (*Nummus*)

56.	B3	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	☧//?	0,84F	RIC VIII 8	XIX

Trier
341-348
CONSTAN-S P F AVG (*Nummus*)

57.	D6	VICTORIAE DD AVGG Q NN	❦//TRP	1,19	RIC VIII 185	LVIII

Arles
337- a. Abril 340
Anv.: Ilegível (Constantino II/Constante/Constâncio II: *Nummus*)

58.	D7	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	O//[...]CONST	1,47	RIC VIII, p. 205	XV

341-348
Anv.: Ilegível (Constante/Constâncio II: *Nummus*)

59.	D?	[VICTORIAE] DD AV[GG Q NN]	P//?	1,54	RIC VIII 83-87	XXIII

Roma
336-337
[CO]NSTANT[I]-NVS MAX AVG (*Nummus*)

60.	D6	GLOR-[IA EXERC]-ITVS (1 estdt.)	- -//R*P	1,10	RIC VII 391	XI

CONSTANTI-[NVS MAX AVG] (*Nummus*)

61.	D6	[G]LOR-[IA EXERC]-ITVS (1 estdt.)	- -//[R]*P	1,15	RIC VII 391	XXXIV

Cízico
337- a.Abril 340
D N CO[NSTAN-TIV]S P F AVG (*Nummus*)

62.	A2	[G]LO[R]-IA EXER[C]-ITVS (1 estdt.)	- -//[?SM]K[...]	0,62F	RIC VIII p. 490-1	XXXVI

Casa da moeda oriental
341-348
[DV CONSTANTI]-NVS PT AVGG (*Nummus*)

63.	D6	[VN]-MR	- -//SM[...]	1,00	-	XXXb

Casa da moeda indeterminada

330-340

Anv.: Ilegível [*Vrbs Roma*] (*Nummus*)

64.	E3e	Loba e gémeos	- -//[...]	1,07F	-	LII

3. Período 348-364

Arles

353-355

D N CONSTAN-[TIVS P F AVG]

65.	D5	FEL TE[MP REPARA]TIO (*FH*3)	D - //TCON	1,50	RIC VIII p. 219	LV

Roma

352-355

Anv.: Ilegível (Constâncio II: AE 2)

66.	D5	FEL TEMP [RE-PARATIO] (*FH*4)	S -//[...]	3,14	RIC VIII 266/269	LVII

352-361

D N CONSTAN-TIVS P F AVG

67.	D5	FEL TE[MP]-REPARATIO (*FH*3)	- -//R[...]	1,91	RIC VIII, p. 274/278	LIX

Tessalonica

350-355

D N CONSTAN-TIVS P F AVG

68.	D5	FEL TEMP-REPARATIO (*FH*3)	Γ -//SMTS	2,83	RIC VIII 189	LXI

355-361

D N CONSTAN-[TIVS P F AVG] (AE 4)

69.	D5	SPES REI-[P]VBLICE	* -//SMTSΔ	1,55	RIC VIII 215	LI

Constantinopla

355-361

[D N CL IVLIA]NVS NOB CAES

70.	D1	Ilegível; tipo *Fel Temp Reparatio* (*FH*4)	•M• -//[C]ONSΘ	1,69	RIC VIII 140	XXI

Cízico

351-354

[D N CONSTAN]-TIVS P F AVG, ε atrás do busto(AE 2)

71.	D5	FEL TE[MP RE-PARA]TIO (*FH*3)	- -//SMKς	3,66	RIC VIII 100	XXXVII

355-361

[D N CONSTAN]-TIVS [P F AVG]

72.	D5	FEL TEMP-REPARATIO (*FH*3)	•M• -//SMKΓ	2,99	RIC VIII 115	XIV

Nicomédia

355-361

D N IVLIANVS-NOB CAE[SAR]

73.	D1	[FE]L TEMP R-[EPARATIO] (*FH*3)	A -//?	1,58	RIC VIII 108	LVI

Casa da moeda indeterminada

352-361

[D N CO]NSTAN-TIVS [P F AVG])

74.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH*3)	?	1,87	-	LIII

Anv.: Ilegível (Constâncio II)

75.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH*3)	?	2,57	-	XXVII

Anv.: Ilegível (Constâncio II /Galo/Juliano)

76.	D?	Ilegível; tipo *Fel Temp Reparatio* (*FH*3)	?	1,53F	-	LIV

4. Período 364-402

Lyon

383-387

D N MAG MAXI-MVS P F AVG (AE2)

77.	D5	REPARATIO REIPVB	- P//[LV]G[?]	3,83	LRBC 380	XXII

Casa da moeda indeterminada

364-378

D N VALEN-[S P F AVG]

78.	D5	[SECVRITAS R]EIPVBLICAE	- -//[...]	2,04	-	XXIX

Anv.: Ilegível (Valentiniano I/Valente/Graciano/Valentiniano II)

79.	D5	[SECVRITA]S RE[IPVBLICAE]	- -//?	1,07F	-	XII

5. Imitações

a) Segundo protótipos de Lyon

Anv.: Ilegível [*Vrbs Roma*] (*nummus*)

80.	E3e	Loba e gémeos	- -//[...]LG	1,36	-	XLIX

[...]ANTINVS NOB C (*minimus*)

81.	B1	[...]ER-CITVS (1 estdt.)	- -//[...]LG	0,56	-	XXVIII	Fig. 110

b) Segundo protótipo de Arles

D N CONSTAN-[...]

82.	D5	FEL TEMP-RE[P]A[...];Galera e fénix	- -//PARL	2,38	-	L

6. Moedas ilegíveis (séculos III-IV)

Séculos III-IV

Anv.: Fruste

83.	-	Fruste		0,45	-	LXVI
84.	-	Fruste		2,33	-	XXIV

Século IV

Anv.: Ilegível (*nummus*)

85.	D?	Ilegível; tipo indeterminado	?	1,00	-	X

Ilegível (*nummus* /AE 3)

86.	X	Ilegível; tipo indeterminado	?	1,02F	-	XXXa
87.	D?	Ilegível; tipo indeterminado	?	1,04F	-	LXVIII

Anv.: Fruste (*nummus* /AE 3-4)

88.	-	Fruste	-	0,77	-	XXXI
89.	-	Fruste	-	0,35FF	-	XXXIII

PART III

THE SOUTHERN GATE

III.1 THE EXCAVATIONS 1994–2002

Cristina Corsi, Devi Taelman

Without doubt the best-preserved Roman remains of *Ammaia* are the buildings of the so-called *Porta Sul*, the Southern Gate. Archaeological remains include part of the town wall, a gate building with two round towers (distinguished as the East and the West Tower), a monumental paved square and residential and commercial buildings.

Other above-ground ruins are visible in the area E of the gate; although they have been little investigated through excavation, they are presented here and referred to with the sector label "*Peristylium*".

Excavations were carried out discontinuously between 1994 and 2002, with a major restoration in 1997 (*Relatorio* 1997: 27; Pereira 2009; Vermeulen 2012). In 2009, Sergio Pereira, an archaeologist formerly employed at the *Fundação Cidade de Ammaia*, published a book mainly focussing on the presentation of the excavations at the Southern Gate (Pereira 2009). This volume, although useful and badly needed for the dissemination of the information retrieved in almost 15 years of archaeological fieldwork in *Ammaia*, is subject to several criticisms and, as we will see later, some interpretations require some re-assessment. We have opted, instead, to attempt to present (in an understandable way) what was reported in the *Relatorios*, even though most data in these reports are presented square by square. In many cases it is very difficult, if not almost impossible, to get the "whole picture" of structures, rooms and complexes, and even less so to understand their modifications and respective relationships[1].

Under the scientific direction of Cristina Corsi and Frank Vermeulen (2007–2012), no excavations were undertaken in this sector[2]. For this reason, presented here is a re-examination of what has been published to date, closely compared to the (often severely lacking) information contained in the *Relatorios*, to offer a framework within which to contextualize the material studies which follow (chapters III.4–III.9).

The abbreviations used here are not the same used in the *Relatorios*, but those used in the publication by Pereira (2009): in Portuguese, P. stays for *parede* = wall, C. for *compartimento*, L. for *lareira* = hearth/fireplace. Further complicating the analysis, the numbering of structures in the *Relatorios* and in the 2009 publication does not correspond. We will mention some of the stratigraphic units (SU) as referred to by Sergio Pereira, as the 2009 publication includes a list of them.

a The Excavations 1994–2002

Cleaning and "restoration" work soon began in this sector after it was decided to undertake fieldwork in the area of the remains of the Roman town of *Ammaia* together with the topographical survey for the mapping of the two properties where most ruins were located (Quinto do Deão and Tapada de Aramenha). Restoration included the reconstruction of one column in the area that was named *sector 1, estrutura A* - the so-called *Peristylium* (*Relatorio* 1994: 2) - made of mixed materials like triangular bricks and reused fragments of stones and "various type" of pottery sherds. The informative pictures attached to the brief report depict trees, shrubs and creepers almost fully covering the structures, and the only recognisable monuments are three partially standing columns of the *Perystilium*, part of the town wall E of the gate (called *estrutura B* of sector 1) and one part of the West Tower (called *estrutura C*). The most consistent consolidation interventions to the walls of the West Tower were carried out in 1997 (*Relatorio* 1997: 27; the inner and outer perspective drawing of the West Tower wall is presented in chapter V.1, Fig. 240). For stability, pre-stressed concrete beams and lintels were placed both inside and outside the walls of the towers. In the same year, scattered column shafts and drums and other architectural pieces were relocated to what was believed to be their original positions (*Relatorio* 1997: 27).

In the course of the 1995 and 1996 seasons, the cleaning operations around the structures—which were, by then, clearly identified with two towers—were finalised and the excavation grid dividing the area into 5m-by-5m squares was laid out (*Relatorio* 1995: 5) (Fig. 111).

Removing the *c.* 0.80m-deep plough soil that overlay the uppermost archaeological features, the first structures to be brought to light were the two circular towers (diam. 6.30m),

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[1] As noted in chapters I.1 and II.1, all plans in the *Relatorios* are given "per level a.s.m.l." and therefore they do not present the overlay of structures and layers grouped by phase, rendering them almost unusable.

[2] An excavation season conducted under the scientific direction of Carlos Fabião (University of Lisbon) was carried out in September 2013, but results of these new excavations have yet to be published.

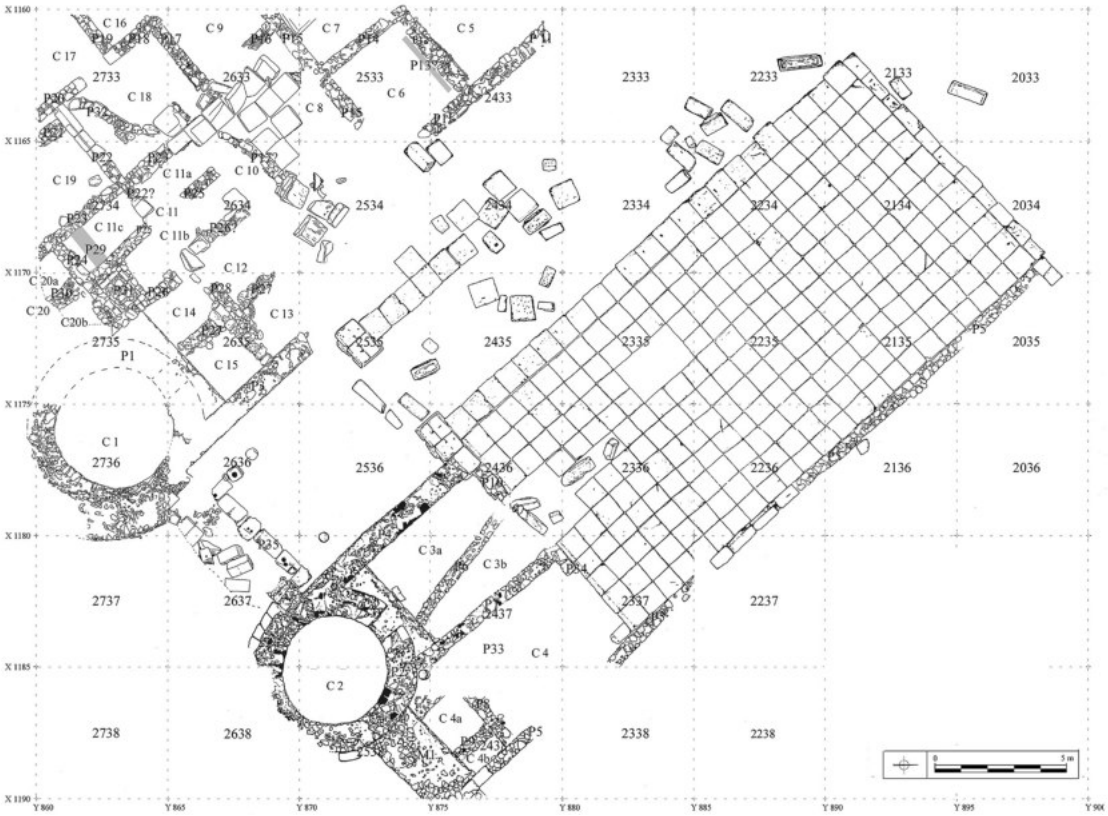

Fig. 111 *Ammaia*, sector B – Southern Gate. Synchronic plan of the excavated structures with indication of the positioning of the squares (© *Fundação Cidade de Ammaia*).

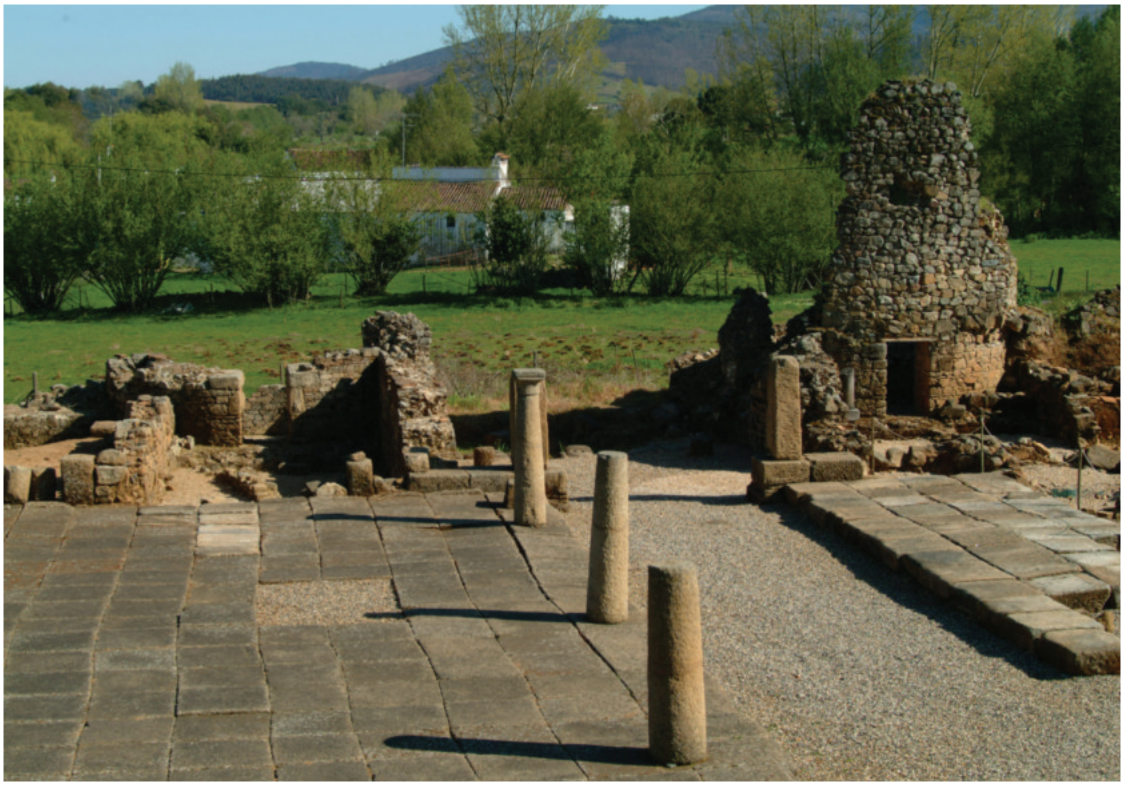

Fig. 112 *Ammaia*, sector B – Southern Gate. View from NW of the structures of the Southern Gate, of the paved square and of the street dividing it in two parts, now filled with gravel and small pebbles. The columns along the street have not been repositioned according to their finding conditions, but on the basis of a "refurbishing" project undertaken in 1996.

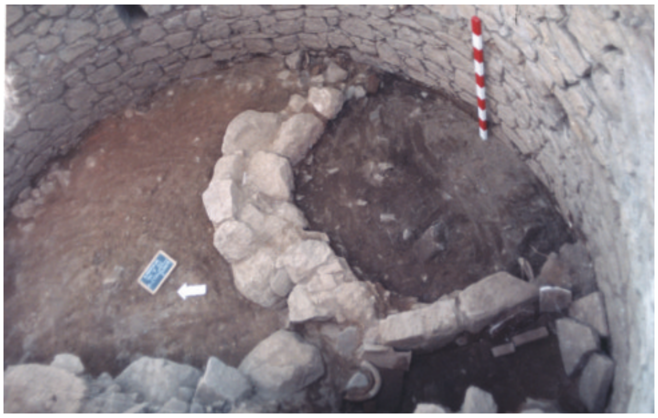

Fig. 113 *Ammaia*, sector B – Southern Gate. View from E of the semi-circular structure, identified with a fireplace, found in the West Tower (© *Fundação Cidade de Ammaia*).

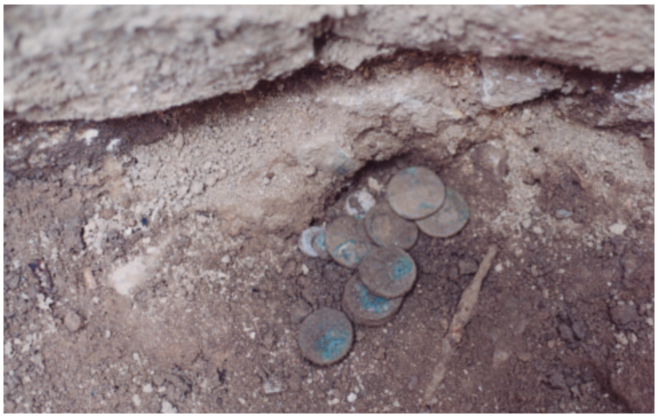

Fig. 114 *Ammaia*, sector B – Southern Gate. The coin hoard from the West Tower (© *Fundação Cidade de Ammaia*).

segments of the town-walls and a part of the monumental square paved with rectangular granite blocks, the plan-view dimensions of which ranged from 0.85 to 1.15m (Fig. 112). The paved square was split into two halves by a street *c.* 4m wide, the preparation layers of which consisted of a very compacted reddish clay (*Relatorio* 1995: 5–6). The overall dimensions of the square were estimated as 21.10 by 10.80m. Among the 1995- and 1996-season finds, the chronology of which was estimated to span the first through the fourth century AD, two smoking pipes, one in ceramic and one in shale are worth mentioning; they were interpreted as being associated with the Moorish people who lived in Marvão (*Relatorio* 1995: 7)[3].

The entrance to the town through the gate was marked by a threshold composed of five blocks of granite, only three of which were preserved *in situ* (*Relatorio* 1996: 8).

The excavations inside the West Tower revealed layers of charcoal overlying deposits dated to the first and second century AD on the basis of the finds, mainly *Terra Sigillata Hispanica* and coins. In the course of a later season, the interior of the tower was completely cleared of debris and deposits. The presence of a small hearth, to the right of the entrance (Fig. 113), suggested that the tower was still in use during the Islamic period, for it was associated with a few sherds of pots and pans dated to the eight-ninth century (Pereira 2009: 72). Two coin hoards were found inside the towers. While the one referred to as *tesouro 2* (SU 359) was surely found on the left side of who leaves the West Tower (Fig. 114, Pereira 2009: 71), the other (referred to as *tesouro 1*) is said to have been found on the right side of the same West Tower (*Relatorio* 1996: 8) or inside the East Tower (Pereira 2009: 71; see *infra*, III.9.d).

In 1999, after a hiatus of one year when all resources were devoted to the excavations and works inside de Quinta do Deão building (*supra*, Introduction), J. Carvalho and S. Borges began investigations in squares 2633, 2634, and 2735, inside the West Tower. Ten granite blocks, which constituted the SE limit and the S corner of the paving of the square, were found in s. 2633 (see Fig. 111); six of them were broken. Two fourth-century coins were among the finds.

Two poorly preserved structures were identified in s. 2634 and one granite block was found in the NE corner, belonging to the western portion of the paving of the square.

During the 2001–2002 seasons, squares 2533, 2534, 2635, 2733 and 2734 were also investigated, while fieldwork continued in squares 2633, 2634, and 2735. During the 2002 summer season, most resources were devoted to the investigation in the Southern Gate area, as it was intended to finalise the research program (*Relatorio* 2002: 10, 16). In the last report, it was possible to divide the several structures into the different phases which had begun to be delineated (Fig. 115). In general, the most poorly preserved walls—such as P. 11 and P. 14, NW–SE orientated, and P. 12, P. 13 and P. 15, NE–SW orientated, found in the squares 2433–2533—were assigned to phase I (*infra*). Their widths ranged from 0.48 to 0.50m. They served to delimit spaces C. 5, C. 6 and C. 7. In the C. 6, was an "*empedrado*" (gravelly bedding) made of pebbles and other stones that was preparation for a beaten earth floor. A circular disruption that partially affected walls P. 11 and P. 15 was also found in this area.

In C. 7, after removing the baulk of s. 2533, a quadrangular granite block with high relief moulding was found, the surface of which marked the surface level of the paved square. Underneath was an older ground level, where bricks delimited a hearth attributed to the first phase.

In s. 2534 the deposits were disturbed by the disassembling of the pavement of the western side of the square. It is possible that in this area some of the granite blocks that were found lying on the natural soil belonged to the first phase and were dismantled to lay the pavement of this western side of the square. In the other surrounding squares,

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[3] The dating to the Moorish period is clearly too early for smoking pipes, that were not introduced in Europe before the import of tobacco from the New World was started.

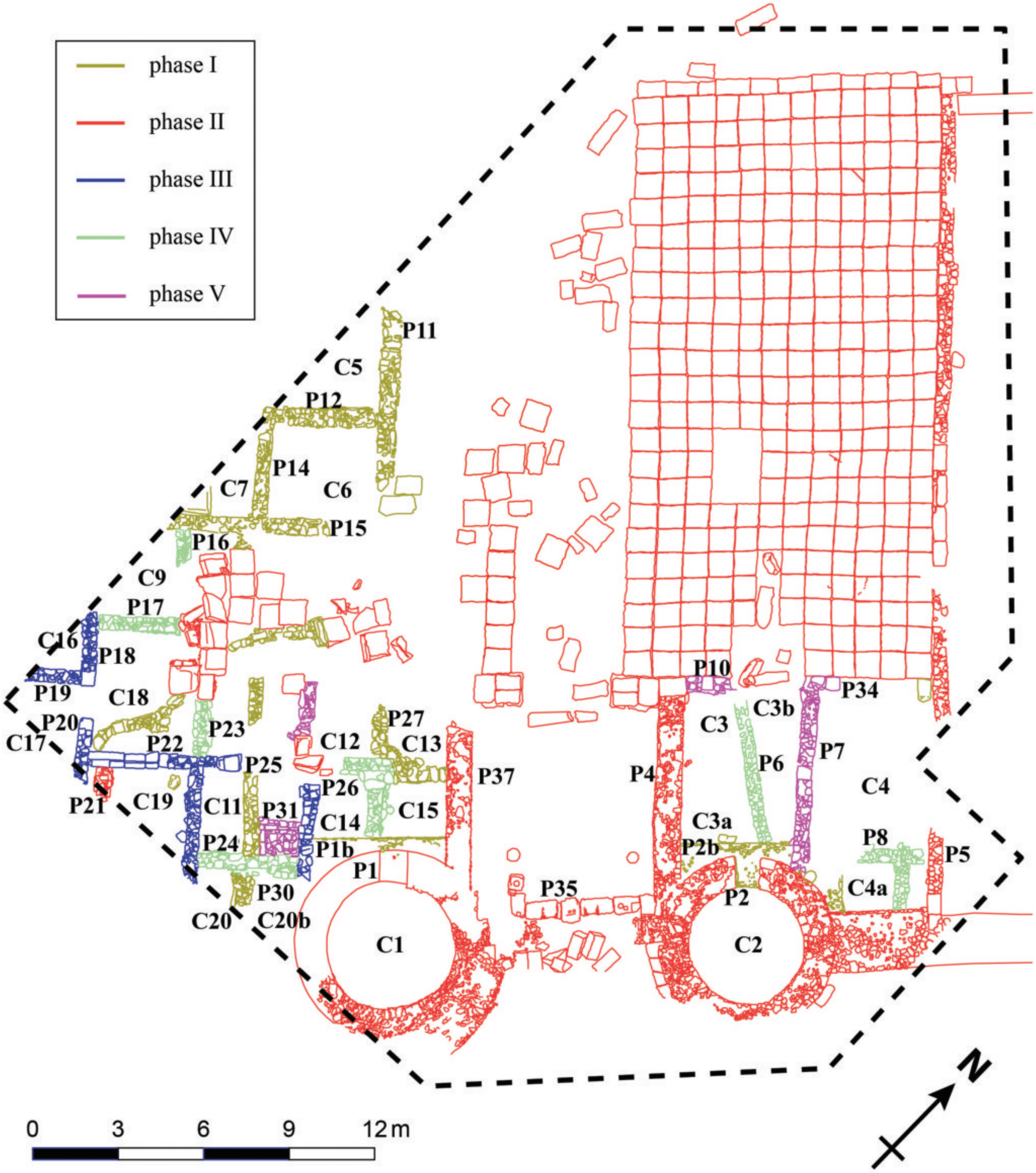


Fig. 115 *Ammaia*, sector B – Southern Gate. Phase plan. Phase I = mid-first century AD; Phase II = end first – beginning second century AD; Phase III = mid second - mid fifth century AD; Phase IV: second half fifth – beginning eighth century; Phase V: beginning eight - mid tenth century (elaboration D. Taelman after Pereira 2009).

indeed, other granite blocks of the paving of the square were found, most of them rolled upside-down, where the surface had been broken by underground subsidence related to the presence of groundwater in the area. This subsidence also occurred in other parts of the square, mainly in the eastern area, as documented in squares 2436 and 2336 (*Relatorio* 2002: 17).

The excavation in s. 2633 brought to light another structure (P. 16) and another room (C. 9) (see Fig. 115). The construction technique of P. 16, made with shale slabs, differentiated it from the other surrounding walls, also shown by its different orientation and a lesser width, which clearly indicated that it belonged (together with the perpendicular wall P. 17) to another construction phase (*infra*; Pereira 2009: 63). It is possible that underneath P. 17 lay another wall, belonging to phase I, the extension of which could be seen as P. 36 in square 2634.

In s. 2633, the excavations uncovered the southern corner of the western area. Here too, the slabs had likely been upset by underground water (*Relatorio* 1998-2002: 25).

In s. 2733, wall P. 21 was found, built in *opus incertum* with mortar to bind pieces of granite and pebbles. As it had been observed that mortar was used only in the masonry of "public" structures (the towers, the town walls, etc.), it was proposed to include this wall in phase II, together with the remodelling of the complex. The monumentalisation of the Southern Gate could have implied the destruction of private houses; the limit of this new structure might be marked by wall P. 21. The dismantling of P. 21 could have taken place in phase IIIa, when it was replaced by P. 20, which, together with P. 18, P. 19, P. 22 and P. 23, delimited a different building. In these walls, granite quoins were used for the first time. The fact that these walls bore substantial foundations in pebbles and used granite, pebbles, brick and tiles in the above-ground masonry shows that they were of fair quality.

The presence of corner stones at the ends of walls P. 18 and P. 20 suggests that between them lay the entrance to another room (C. 17) where a hearth was found against wall P. 19. This space could have, therefore, been used as kitchen, at least in the last occupation phases (phase V, *infra*).

The presence of a large granite threshold in structure P. 22 suggests that C. 19 had a commercial function. Here a *dolium* was inserted in the floor level, clearly connected with the commercial activities performed there. The entrance of this *taberna* had to be through C. 18, which, during phases II and III, was an open space, being lately closed with the construction of the wall P. 17 and the extension of the wall P. 23 (phase IV). In the last period of occupation, the width of the threshold of the door (P. 22) was reduced (Pereira 2009: 65-66).

Inside C. 19, after removing the layer of debris (bricks, tiles, roof-tiles, stones, etc.), a circle of irregularly shaped stones arranged around a shale slab was found; although no materials were found in association with this structure, it was interpreted as the remains of a ritual foundation deposit associated with the town's foundation (Pereira 2009: 66).

In s. 2634, where the archaeological deposits were not deep, wall P. 25 (only 0.46m wide) was assigned to phase I because of its NW–SE orientation, as aligned with P. 14.

The stratigraphy in s. 2734 contained several features of interest, despite the disturbance caused by post-depositional events. The small hearth L. 3 was assigned to the first phase; its clay pavement was associated with the wall P. 25, which bore the same alignment and construction technique as P. 14. Hearth L. 4, however, was made with a base of mortar, at a higher level, and could, therefore, belong to the second phase.

SE of wall P. 24, there was a small room (C. 20) which extended up to the town wall. There was no evidence to determine the function of this room, but, at a lower level, lay structure P. 30, which could have been linked to the walls. Its construction technique was unique: the width was 0.56m and shale slabs were placed vertically within it. The overlying deposits contained materials dating from the Flavian period to the beginning of the second century AD (Pereira 2009: 68).

Just in front of the entrance of the West Tower, in s. 2635, there were remains of three structures (P. 27, P. 28 and P. 37). P. 27 (0.49m wide) abutted P. 1b and was composed of slabs of shale, quartzite, pebbles and granite, fragments of ceramic building material, and was dated to the phase IV or even V (*infra*). P. 28 (0.43m wide) lay perpendicular to P. 27 and linked P. 3 to P. 26. The extension of P. 24 up to the West Tower seems to have been related to the construction of P. 28 and the intention to occupy the area in front of the tower. Wall P. 37 (0.46m wide) could have been built together with P. 27 and P. 28, or slightly later.

The most prominent structure in s. 2635 was P. 3, unusually wide (0.88m), with a construction technique similar to *opus mixtum* of good quality. This structure ran from the West Tower to the limit of the pavement of the square; it delimited the gate. Above the foundations, which were usually built in pebbles, P. 3 was built with irregular fragments of granite, bound with mortar, separated by string-courses of one or two rows of bricks approximately every 0.90m.

The robustness of this wall could indicate that it functioned as buttress of the tower, but we cannot exclude the possibility that a vaulted room lay between P. 3 and P. 4. This vault, therefore, would have linked the arch over the doorway (P. 35), whose remains can be seen inside the tower, to the other arch, possibly located at the "*terminus*" of structures P. 3 and P. 4. Between the walls P. 3 and P. 4, the *Arco de Aramenha* was most probably placed (*supra*: Introduction, and *infra*: III.1.b).

The proposed chronological phasing

As we have seen above, a first chronological phasing has been attempted primarily using the different building techniques as *discrimen*, integrated with other evidence, such as stratigraphic relationships and the historical record.

The archaeologists that undertook the excavations in the area suggested a chronological division comprising seven phases, the first of which corresponded to the first settlement, and therefore should be placed in the Augustan period.

This phase was followed by a second (Flavian–Trajanic), during which the area was monumentalised. To this phase we assign the variant Ic of the building techniques (*infra*, chapter V.1). In the first part of the third phase (IIIa, between the last quarter of the third and the beginning of the fourth century AD), the housing sectors were restructured, and other alterations in the same area occurred during phase IIIb (last quarter of the fourth–mid-fifth century AD). The Late Antique period (defined as Visigothic) was divided in two sub-phases (IVa: second half of the fifth–beginning of the sixth century; IVb: second half of the sixth–beginning of the eighth century), the second being more characterised by "usurpation" of some public spaces and the encroachment by private dwellings. The type II and its variant IIa of building techniques (*infra*, chapter V.1), would have been adopted during these phases III, IV and likely also V. With the beginning of the eight century, the Islamic period began, lasting until the mid-tenth century (phase V). The Late Medieval period (phase VI, mid-tenth–fourteenth century) saw the abandonment of the site and new patterns of (re)occupation, while phase VII denotes the period of robbing and reuse of materials as well as the construction of new structures and dwellings up to the present day.

The monumental complex of the Southern Gate, composed of towers, gate and paved square, was attributed to the second half of the first century AD (Flavian period) and was hypothetically connected with the elevation of *Ammaia* to *municipium* status (Oliveira, Fernandes and Olivio 1999: 134), even if S. Pereira thought that construction here was finished during the Trajanic period (Pereira 2009: 60-61).

In the course of the fourth century, the gate was remodelled, as is shown by the rough masonry of the walls and the use of *spolia*. According to Jorge Oliveira, who first directed fieldwork in this sector, the finds from the West Tower, and in particular the (nearly) 100 coins dated to the third and fourth century, together with some structural elements, such as the stone blocks "clearly fallen from the shutters that give access to the towers", strongly suggest an important construction phase. This phase implies a reorganisation of the defensive system of the town, which, specifically for the gate, would have created an access "bottleneck" (*Relatorio* 1996: 20).

"Rough" building techniques, which include an abundance of clay as a binding material and are characterised by scarcity of stones, sometimes clearly reused, and that were hypothetically paired with elevations in mud-brick, have been attributed to phase V.

One of the most interesting interpretations as regards town-planning is that it seems that the area between P. 3 and P. 21 was unoccupied at least until the end of the third–beginning of the fourth century AD. In the Late Imperial phase, new structures were built (P. 23 and P. 26) clearly meant to occupy a public area, formerly open, between the town walls and the pavement, to delimit a new room (C. 11), where a *taberna* was installed. The floor level was then raised up to the level of hearth L. 5, located near the entrance to room C. 11. Although the threshold of the door was found in poor condition, it is possible that it can be correlated to that of the neighbouring *taberna* C. 19.

According to this interpretation, structure P. 24 was built in the Visigothic phase. This wall, together with hearth L. 6, gave a new aspect to room C. 11. This structure was of poor quality, using a variety of stones and ceramic building material, and its width was 0.55m (Pereira 2009: 73-76).

The original interpretation that the West Tower was occupied up to the Islamic period, which was made on the basis of structural elements and artefacts, cannot now be supported, following our review of the evidence (see chapters: III.4–III.9).

The so-called "Peristylium" sector

This area has never been excavated, but only cleaned, beginning in 1994 (*supra*). Nonetheless, it is possible to establish the presence of what can be defined as a *peristylium*, in the northern corner of a large building, flanked by at least three parallel rooms (the so-called *cellae*). This was clearly part of a larger *ensemble*, delimited by structures Pr. 1, Pr. 4 Pr. 5 and Pr. 6, the total surface of which would have, therefore, encompassed 975m^2 (Fig. 116).

Hypothetically, the façade of the building on the side of the paved square would have been constituted by the wall Pr. 5 (29.74m). Sergio Pereira argued that the relative narrowness of the wall (0.47m), and the fact that only earth was used as binding, is an indication that it was not a load-bearing wall, but could have been a remake of a pre-existing one (Pereira 2009: 42-44). Yet, when compared to other structures of early date, such as the walls delimiting the so-called *ambiente* B in the Baths, it differs neither in technique or dimensions, and could, therefore, simply represent one of those walls built before the use of binding mortar was common, whilst it could have supported a mud-brick superstructure (*infra*, II.2.a).

The entrance was probably located more or less in the middle of P. 5, as is shown by the presence of the threshold and of the base of the jambs, both in granite. The SE limit of this space was formed by with the well-preserved wall Pr. 4, abutting the town wall.

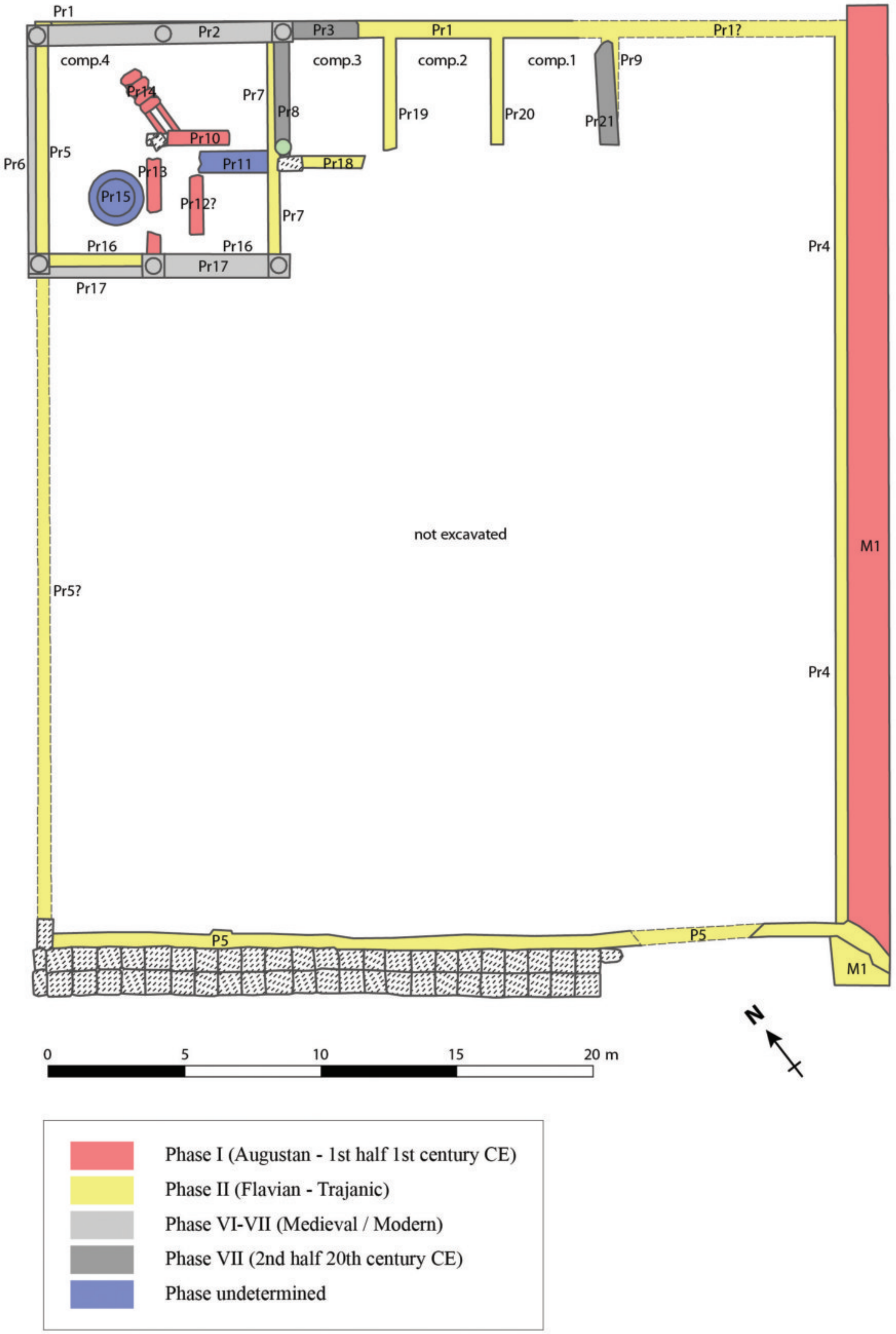


Fig. 116 *Ammaia*, sector B – "*Peristylium*". Phase plan. Phase I = mid-first century AD; Phase II = end first – beginning second century AD; Phase III = mid second - mid fifth century AD; Phase IV: second half fifth – beginning eighth century; Phase V: beginning eight - mid tenth century (elaboration D. Taelman after Pereira 2009).

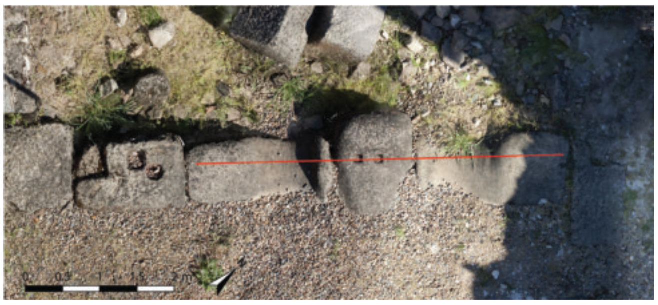


Fig. 117 *Ammaia*, sector B – Southern Gate. Gate threshold (elaboration D. Taelman).

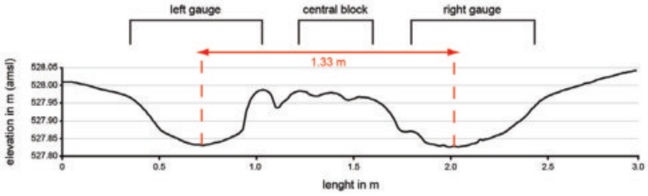


Fig. 118 *Ammaia*, sector B – Southern Gate. Profile of the gate threshold. The distance between the centre of the gauges is 1.33m (elaboration D. Taelman).

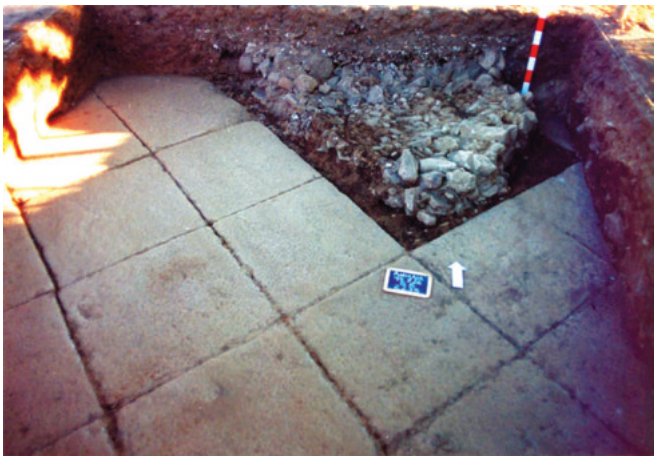


Fig. 119 *Ammaia*, sector B – Southern Gate. Podium in opus *caementicium* for a monument base in the eastern part of the square (elaboration D. Taelman).

The eastern wall of this building (Pr. 1) bears the same characteristics. Here, a secondary entrance could have been located under structures Pr. 2 and Pr. 3, which were clearly more recent.

The NW limit is also represented by the barely-preserved wall Pr. 5. Four perpendicular walls (Pr. 7, Pr. 19, Pr. 20, Pr. 9) were built against the back wall Pr. 1, creating the three *cellae*.

Seven cylindrical columns (0.50m diam.), composed of diverse reused materials, were raised above the walls and created a square structure, properly identified as a courtyard or *peristylum*. There were probably originally eight columns, and they possibly supported a wooden pergola. The structures Pr. 10, 11, 12 (?) and 13 were demolished to create an open space (62.80 m²).

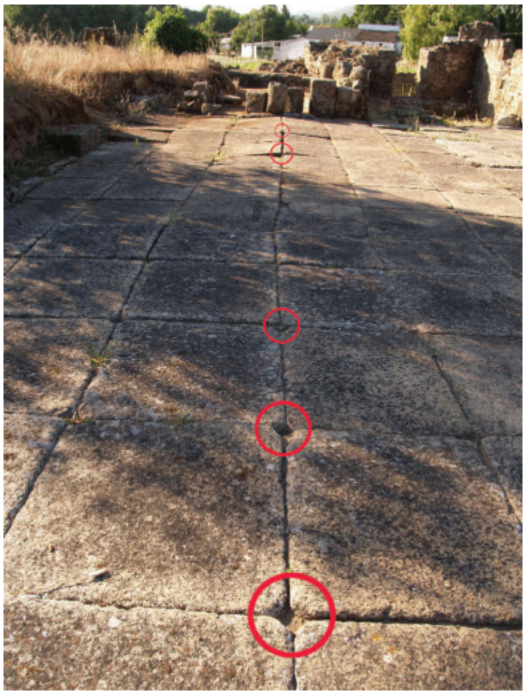


Fig. 120 *Ammaia*, sector B – Southern Gate. Holes for wooden or iron posts. The square paving blocks measure 0.88–0.90m (photo by M. Klein).

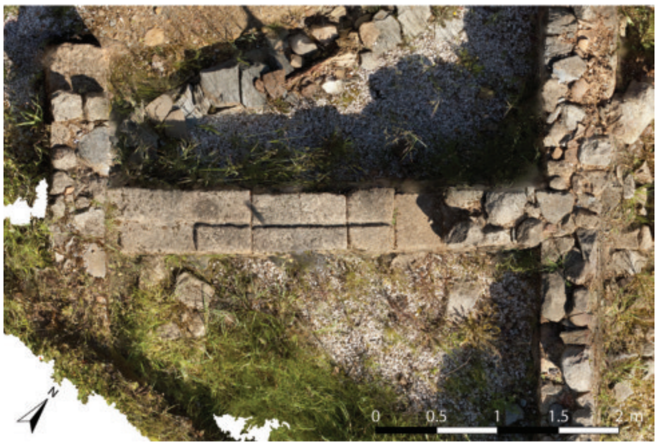


Fig. 121 *Ammaia*, sector B – Southern Gate. Threshold of the entrance to one of the shops along the western half of the square. The groove for the wooden shutter is visible in the centre of the image. On the right, a cut-away and a hole for the hinge indicate the location of the door opening.

Structure called Pr. 12 could be considered part of a *suspensura*, and together with conduit Pr. 14, supports the presence of heated rooms.

It is clear that this complex also underwent several phases of construction. To the first, we could assign the channel Pr. 14, built with shale slabs, and probably also the structures Pr. 10 and Pr. 13; in both walls, the binding was an earthy orange mortar.

The characteristic of the structures of the second phase was that only granite was used and the masonry was regular, with spans of 0.5m height, bound with mortar.

According to S. Pereira, the *Peristilium* was built during phases VI or VII of the Southern Gate, corresponding to the Medieval–modern periods, with structures Pr. 2 (above Pr. 1), Pr. 6 (juxtaposed to Pr. 5) and Pr. 17.

Below, the way these above-ground structures have been interpreted, and how they can be integrated with the results of the geophysical survey (*infra*, sections III.1.b and III.3), is discussed. Here, however, it ought to be noted that a colonnaded courtyard positioned in this location would be eccentric and the definition of *peristylium* seems improper.

C.C.

b Attempting a general framework

As general remark concerning what has been presented above, we can surely state that the monumental gate complex went through several construction phases, the earlier of which appear to have primarily comprised housing.

As a result of the monumentalisation of the area at the end of the first and the beginning of the second century AD, very little is known of these earlier phases, except for a few structures preserved underneath the western half of the paved square (Pereira 2005) (see Fig. 115). During a general on-site survey of the structural evidence, we recorded traces of the original setting of the entrance to the town, which were not taken into account in former work. They primarily comprise the bases of the towers, which are different in shape and technique: with regularly shaped granite blocks on the inner side of the tower (in Fig. 115 they correspond to walls P. 1b and P. 2b, correctly attributed to phase I by Pereira 2009: annex VIII, p. 175), while on the outer rounded walls of the towers they are moulded blocks.

Among the key features of this first phase is the town's principal NW–SE-orientated street, the so-called *cardo maximus*. The absence of a street paving indicates a dirt street or a street made of beaten earth mixed with small pebbles.

At the end of the first century AD and in the beginning of the second century AD, the whole area was monumentalised (Pereira 2002, 2009; Quaresma 2010–2011). Earlier buildings were demolished and a monumental complex was erected. The new architecture was dominated by an arched gate building flanked by two circular towers and a monumental square (see Fig. 112). To support the massive towers and the archway, the part of the town wall immediately adjacent to the towers was widened.

The towers had external diameters of 6.3m and were separated by an open space for a gateway of 6.4m wide.

The walls and the towers were built with a similar technique of two facings held together by a rubble concrete. The town walls, preserved here only E of the East Tower, were thicker than those at the parking Lot 2 site, as they are more than 2m wide.

Two rectangular holes for lock-pins in the central block of the threshold and four circular and rectangular holes for hinges show that the gate consisted of two elements each measuring 1.75m wide and turning inwards (Fig. 117). The actual passage was 3.15 m. Well-developed cart ruts survive in the granite blocks of the gate threshold. These cart ruts (*c.* 0.16m deep) prove that the Southern Gate was one, if not the primary, of the town's gates through which heavily loaded carts entered the town. Measured from the centre of the ruts, a gauge of 1.33m for the Roman carts in *Ammaia* can be estimated (Fig. 118).

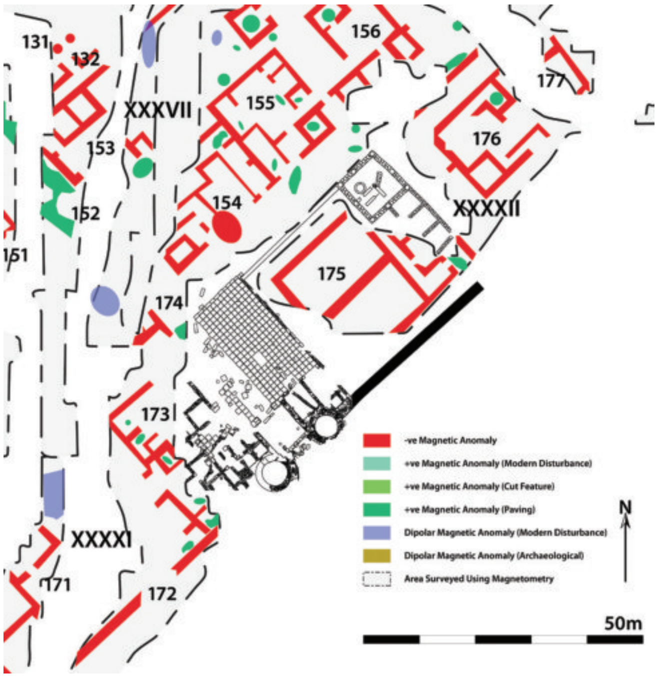
Except for the arch abutments that have survived to a height of 3.30m, nothing remains in place of the original archway. Nevertheless, some supposition of the original arched entrance can be proposed on the basis of the already-mentioned photograph taken in 1890 of the *Arco da Aramenha* (Vermeulen 2012; *supra*, Introduction). Using the commemorative plaque which features on the 1890 photograph, of which the dimensions are known, V. Mantas (2010b) calculated a 3.30m span for the Arco de Aramenha, after which he argues that the Arco de Aramenha was not the original gateway from Roman *Ammaia* because the span between the remains of the two towers equals 6.50m. However, 6.50m does not correspond to the width of the gateway, but to the width of the courtyard behind the gateway. Considering the actual distance of the spanned area in *Ammai*a (see the 3.15m long gate threshold), a span of 3.30m for the *Ammaia* archway is perfectly plausible. Moreover, a distance of 4.70m between the preserved parts of the arch abutments leaves sufficient space for the ashlar blocks of the facing of the abutments. Based on the 1890 photograph, the height of the arch is estimated at 4.90m, plus an extra 1.25m for the cornice, totalling around 6.15m.

Behind the gate entrance, two parallel walls defined an internal courtyard. At the ends of the two walls, two foreparts slightly reduced the width of the street and marked the entrance to the monumental paved square. The assumption of a second archway at this location, as proposed by S. Pereira (Pereira 2009: 70-71), is unlikely considering the absence of proper abutments and a completely different construction technique for the two foreparts of the courtyard in comparison to the gateway near the towers.

The gate building opened onto a large rectangular square of 20.95 by 24.30m, symmetrically arranged on either side of the 4m-wide *cardo maximus* (see Fig. 112). While the western half of the square is heavily destroyed, the eastern part is almost perfectly preserved. The side of the square facing the town was open. On the north-eastern edge, the square was defined by the perimeter wall of an adjoining building. No similar structure was detected on the south-western edge. Given the location along one of the town's main streets and entrances, a commercial function for the rooms between the towers, the town wall and the square is likely. More or less in the middle of both sides of the square, a small podium for a statue base was placed (Pereira 2005) (Fig. 119).

In the NE corner of the square, two holes of 0.10 by 0.10m probably contained vertical dowels for an upstanding structure. Several openings of *c.* 0.07m in the joint of the pavement blocks occurring at 2.6m from the NE edge of the square were used for placing wooden or iron posts. These posts could have been used for attaching a canvas to provide the necessary shade during the hot summers (Klein and Corsi 2013: 52-53) (Fig. 120). Three monolithic columns, found during the excavation of the street area and now displayed in the new arrangement of the area, give an impression of the architectural decoration of the square. How this decoration was exactly conceived is uncertain.

The statement that, sometime in the second half of the second century AD, a large fire destroyed parts of the monumental building, after which architectural modifications were plentiful (*Relatorio* 1999; Pereira 2002, 2005, 2009), finds no foothold in the excavation reports, where the only mention of fire is the layer of charcoal removed inside the West Tower (*supra*). In any case, according to the same authors, despite these modifications, the general view and layout of the town entrance with its gate building, towers and monumental square remained the same. Architectural changes are most notable in the areas between the towers, the town wall and the square where the existing rooms were subdivided into smaller units. On the eastern side, the large room was subdivided into two more or less equal rooms. The paving of the new rooms was made of shale slabs. On the western side, the new rooms served as *tabernae* or shops. These shops are identified essentially by their characteristic method of closing with a detachable wooden shutter that was placed into a grooved door threshold (Adam 2005: 346) (Fig. 121). The presence of two *dolia* in one of the rooms confirms its commercial function (Pereira 2009: 65). The succession of fireplaces in the other shop perhaps illustrates that hot drinks or food were served.


131
132
XXXVII
155
156
177
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154
152
151
XXXXII
175
174
173
XXXXI
171
172
-ve Magnetic Anomaly
+ve Magnetic Anomaly (Modern Disturbance)
+ve Magnetic Anomaly (Cut Feature)
+ve Magnetic Anomaly (Paving)
Dipolar Magnetic Anomaly (Modern Disturbance)
Dipolar Magnetic Anomaly (Archaeological)
Area Surveyed Using Magnetometry
N
50m

Fig. 122 *Ammaia*. Interpretative plan based on the geomagnetic survey data. Detail of the Blocks XXXVII, XLI, XLII. Numbers are explained in Johnson 2012 (elaboration P.S. Johnson).

The so-called "Perystilium"

As described above, in the middle of the eastern half of the square, a passageway in the wall Pr. 5 opened onto a large rectangular area of *c.* 975m². The results of the magnetometer survey (Johnson 2012: 67) revealed a large courtyard occupying most of the area E of the Southern Gate. These anomalies (indicated with the no. 175 at Fig. 41, p. 60 of Johnson 2012, here partially reproduced at Fig. 122) were interpreted as "structural responses, more suggestive of garden features than the internal divisions of substantial buildings", while the series of the three *cellae* (*supra*, section III.1.a) is completed in the geophysical data interpretation by a group of structural responses, defining a series of rooms opening onto a corridor (Johnson 2012: 67). Judging from the orientation and location, it is possible that some of the features detected in the geomagnetic data belonged to an early phase, immediately after the foundation of the town and prior to the construction of this building. In the northern corner of this building, is the so-called *Peristylium* described above. The structural stratigraphy of the exposed remains indicates several successive building phases. Some structures might even be related to the eighteenth-century AD farmhouse of the Quinta do Deão. This row of five rectangular rooms of *c.* 4 by 4m occupied most of the eastern end of the building, but it is not certain whether they opened onto a central courtyard or onto the corridor visible in the geomagnetic data. Even though very little is known of the layout of the building, it has been proposed to interpret this building as a *macellum* or food market (Mantas 2000; see, *infra*, chapter III.3). This interpretation could be supported by the possible identification of a secondary entrance on the NE side (Pr. 1).

D.T.

III.2 CONSTRUCTION TECHNIQUE AND STONE USE

Devi Taelman

Some of the walls of the area of the Southern Gate and the *Peristylium* will be analysed in detail in the chapter III.4, and some of the observations will be used to discuss the more technical aspects of building techniques in *Ammaia* (chapter V.1), but here we will comment on some general aspects of construction techniques and of their evolution.

As mentioned above, few remains of the earliest buildings have survived. The walls were between 0.46m and 0.51m wide and consisted almost exclusively of granite facing stones with a core of gravelstone and some quartz and shale. The bonding material was earth. The size of the facing stones was around 0.20m across, with some larger stones reaching up to 0.35m. For the construction of the drain channel, rounded gravelstone, granite and roof tiles are used; the capping was of shale.

Together with the monumentalisation of the area, some new elements regarding the construction technique were introduced. These primarily included the use of mortar and of granite ashlar blocks.

Unlike the few remains of the archway, the two walls defining the small courtyard behind the archway are well preserved. Remains of the two structures stand to a height of 2.7m and 2.3m, for the western and the eastern walls respectively. The width of the walls was 0.87m. Both walls were constructed with a *caementicium* core of quartzite, sandstone, gravelstone and some fragments of ceramic tile. The mortar was a light-coloured to yellowish lime mortar (Cardoso *et al.* 2013). Towards the main square, the walls terminated in two foreparts formed by rusticated granite ashlar blocks. The wall facings consisted of rubblework alternated at regular intervals by brick courses (Fig. 123). The vertical spacing of the brick courses was 0.94m for the western wall and 0.90m for the eastern wall. The bricks were not limited to the wall facings but connected both faces of the walls.

The facing stones were granite and some shale. The granite facing stones measured *c.* 0.30m across. In addition to the brick courses, level surfaces were created in the rubblework masonry with smaller granite stones and shale slabs. The vertical spacings of these horizontal courses were 0.52m, 0.48m and 0.47m. In the eastern wall, brick courses occurred on top of every two horizontal courses. In the western wall, the bricks were laid slightly directly above the horizontal courses. This type of masonry that combines brick courses with rubble-work masonry was, for example, also observed in the so-called Temple of Diana in the colonial forum (dated to the Augustan period) and in the *Portico del Foro* (dated to the first half of the first century AD), both in *Augusta Emerita* (Pizzo 2010).

One series of putlog holes for scaffolding aligned to the brick courses. A total of three putlog holes were needed to span the length of the small courtyard (see Fig. 123). These putlog holes have a horizontal spacing of 1.92m and 1.71m. As the putlog holes extended through the entire width of the

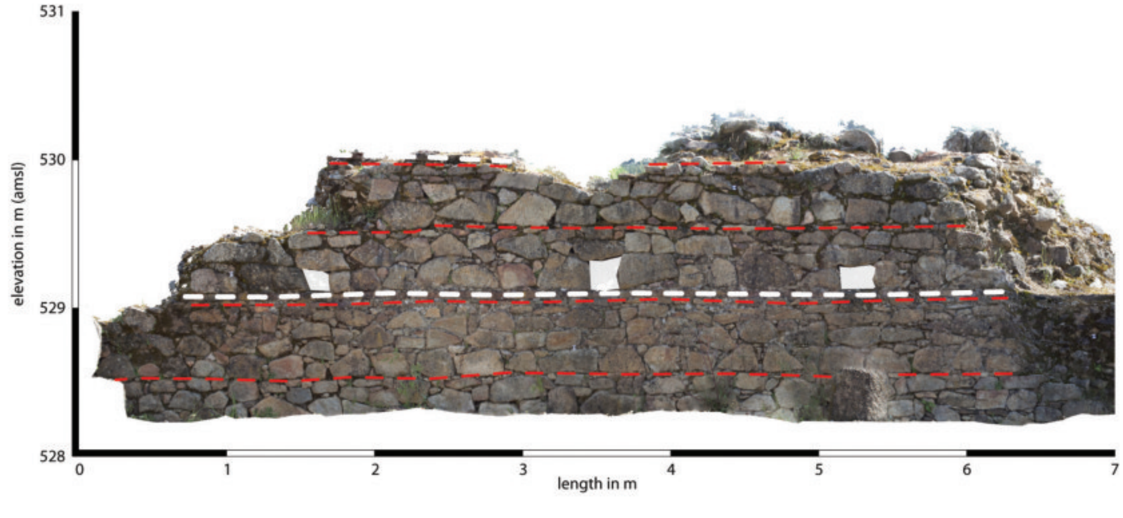

Fig. 123 *Ammaia*, sector B – Southern Gate. Elevation of the eastern courtyard wall of the gate building. Levelling courses are indicated with a red dashed line, brick courses are indicated with a white dashed line (elaboration D. Taelman).

walls, it is clear that a cantilevered scaffolding system with transverse putlogs supporting a scaffold on both sides of the wall was used (Adam 2005).

The two towers, which were constructed together with the archway and the inner courtyard, still stand to a height of *c*. 1.85m for the East and *c*. 5m for the West Tower. As we saw above (*supra*, section III.1.a), the upper part of the West Tower is a recent restoration, carried out at the beginning of fieldwork in *Ammaia*[1]. The width of the tower walls was 1.80m for the lower courses of the West Tower and 1.50m for the eastern wall. These lower courses consisted of carefully cut granite ashlar blocks of roughly 0.55 by 0.60 by 0.40m set into an *opus caementicium* core. The width of the upper parts was between 1.05m and 1.10m for both towers. The construction method used for the upper parts was *opus caementicium* with an *opus mixtum* facing, similar to that of the two courtyard walls. The mortar used was light-coloured to yellowish and composed of a lime binder with crushed tile, brick and grains of shale (Cardoso *et al*. 2013). The brick courses occur above every two horizontal courses in the rubblework architecture. Putlog holes were associated with the brick courses. In the East Tower, the putlog holes were found on one level only. In the West Tower, they were observed on three different levels with a vertical spacing of 0.90 – 0.95m. A similar cantilevered scaffolding system like that of the courtyard walls was used.

The paved square was composed of square granite blocks with an average size of 0.88–0.90m. A row of smaller, rectangular granite ashlar blocks defined the edge of the square facing the town. Their size ranged from 0.45 by 0.63 to 0.55 by 1.20m (see Fig. 112). The thickness of the blocks varied from 0.26 to 0.35m, with an average thickness of 0.33m. To pave the entire 509m^2, a total of 540 blocks were needed. With a mass density for granite of 2640 kg/m^3 (Hunt, Moskowitz and Banerjee 1995: 190), the average weight of a block would have been 693 kg. A similar paving technique with large rectangular to square granite blocks was used in *Augusta Emerita* in the colonial forum (Nogales Basarrate 2008). On several blocks, shallow, elongated holes (0.06–0.10m) can be interpreted as crowbar holes to lever blocks into place. Some deeper square holes (0.10m) were probably intended to hold vertical dowels for upstanding structures, perhaps related to a canvas roofing (see Fig. 120).

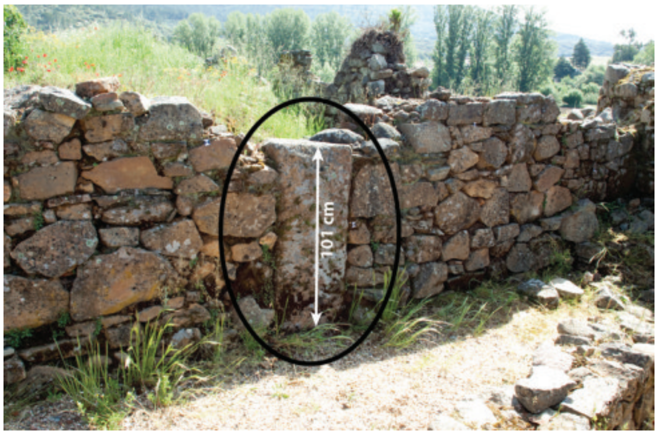

Fig. 124 *Ammaia*, sector B – Southern Gate. Late Roman wall characterised by a coarser construction technique and the reuse of granite ashlars from an earlier phase (elaboration D. Taelman).

The perimeter wall of the square on the eastern edge (corresponding to wall Pr. 5) measured 0.47m in width and was made up exclusively of irregular granite stones in *opus incertum*. The size of the stones varied between 0.20 and 0.30m. The use of earth as bonding material imposes the idea that the wall did not serve any structural purpose, but merely separated the monumental square from the neighbouring building (the so-called "*Perystilum*". The connection with the town wall is reinforced with ashlar blocks measuring 1.20 (L) by 0.50 (W) by 0.43m (H). In addition, the threshold of the doorway to the "*Peristylium*" complex and the doorposts were also made of granite ashlar blocks.

In comparison with the Flavian–Trajanic phase, the later phases were characterised by a coarser building technique. Stonecutting was less careful, stones tended to be slightly larger and less care was taken while laying the stones. There is also clear evidence of stone recuperation from earlier buildings (Fig. 124). Even though granite remained the primary stone, the use of gravelstone and sandstone was more marked. The width of the walls remained roughly the same (0.45–0.52m). Walls were constructed with an *opus incertum* facing and the bonding material was earth. Like in the Flavian–Trajanic phase, granite ashlar blocks were used at wall corners and intersections and doorways, as well as for the *taberna* thresholds (see Fig. 121). Walls are not preserved to a sufficient height for remains of a scaffolding system to be visible.

As discussed in further detail below (chapter V.1), these walls are framed into the type II and variant IIa of building techniques.

In total, 230 fragments, or some 90 kg, of ornamental stone came from the Southern Gate excavations. One hundred and twenty-four pieces, or 53 % of the total volume, originated from the squares corresponding to the West Tower. The remaining fragments were found in the area of

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[1] That the documentation about these modern restorations is so limited and inaccessible has mislead some of the archaeologists who attempted the reconstruction of the phasing of the Towers. Only Sergio Pereira (2009: 72) insinuates doubt that these remakes have to be assigned to "modern times". The traditional interpretation is that the part of masonry above the Tower door's lintel was rebuilt after the abandonment. This new masonry is of bad quality, a kind of *opus incertum* that uses irregular granite and quartzite stones mixed with mortar. This wall starts above the lintel of the door but doesn't perfectly follow the perimeter of the Roman tower. At the moment of this later construction, if modern, the ground level should have been around the door-lintel, and this would explain the slight deviation.

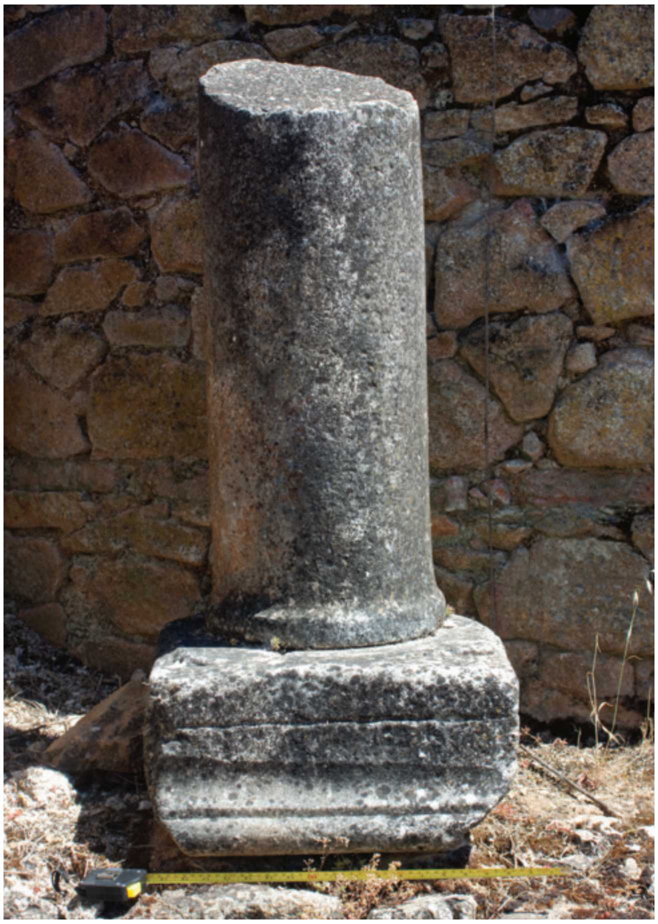

Fig. 125 *Ammaia*, sector B – Southern Gate. Column and pedestal in white marble (dimension of metre scale: 0.50m) (elaboration D. Taelman).

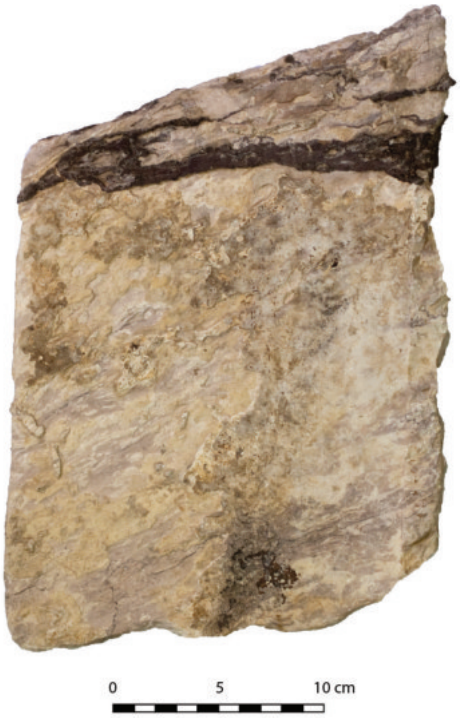

Fig. 126 *Ammaia*, sector B – Southern Gate. Fragment of a pink limestone veneer panel found inside the West Tower (photo by D. Taelman).

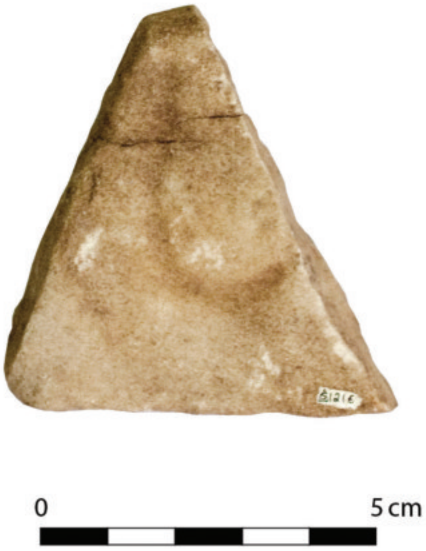

Fig. 127 *Ammaia*, sector B - Southern Gate. Fragment of an inscription in white marble bearing the letter 'O', found in the East Tower (photo by D. Taelman).

the East Tower and in the commercial areas between the square, the town wall and the towers. Finally, a column base with a pedestal in white marble that is currently exposed in front of the West Tower came from the Southern Gate excavations, but its exact provenance is unknown (Fig. 125, see chapter IV.1, no. lap_093.).

Among the ornamental stones, two different types can be identified: (1) a white marble, sometimes with a few grey veins; and (2) a pink limestone. With 65 % of the total volume, the white or white veined marble form the largest category. In addition, pink limestone (35 %) was also important for the embellishment of this monumental complex (Fig. 126).

Most pieces were parts of wall and floor revetments. Veneer panels occur more or less equally in white or white veined marble and pink limestone, respectively 54 % and 46 % of the total volume, whereas five of the six mouldings are in white marble. The fragments of moulding were found in the area of the East Tower (4 pieces) and in the area between the East Tower and the eastern half of the square (2 pieces). The fragments of pink limestone came almost exclusively (84 % of the total volume) from the interior of the West Tower. One fragment of an inscription bearing the letter O was found in the East Tower (Fig. 127). Two small column bases were found in the eastern half of the paved square; one near the base of the monument in the centre of the paved area and one halfway along the eastern edge of the square. Finally, a large fragment of a white marble veneer panel (0.40 by 0.20 by 0.05m) was reused for the construction of the eastern wall of the gateway.

III.3 COMPARATIVE RESEARCH, INTERPRETATION AND VOLUMETRIC RECONSTRUCTION

Cristina Corsi

The preserved version of the monumental Southern Gate presents a single arch between flanking projecting towers, a very common gate type in continental Western Europe and Britain (Butler 1983: 128). The two round towers belong to the type classified as "hollow internal tower", and even if they interrupt the line of the walls (Varene 1987: 20), they are of the same build as the walls (Butler 1983: 128). Comparisons have already been made with the gates of *Roquemaure* at Orange (very beginning of the first century AD) and *Porta Boiano* in *Saepinum* (Tiberian age; see Corsi 2012b: 44). With other published examples, such as the round towers of Cologne, likely built soon after the town was awarded the status of *colonia* by Claudius (AD 50; Hellenkemper 1983: 23), we can remark how the thickness of the walls of the German town is proportionally much greater, suggesting the possibility that the towers of *Ammaia* did not play a real defensive role as a bastion.

The same question arises about the NE gate of *Baetulum* (Badalona, in Catalunya), where one square tower connected to a city wall only 1.50 m thick (Serra 1939: 273–276). Although this gate is planimetrically different from that of *Ammaia* and its construction date seems to be much earlier (second century BC), similarities can be pointed out. Firstly, several buildings clustered around the gate and the street entering it, some of which have been interpreted as commercial buildings, one as an amphorae-storage room (Serra 1939: 281–283). Secondly, as at *Ammaia*, these buildings were attributed to two different construction phases, the second of which was characterised by structures with a large quantity of re-used material. Thirdly, some technical aspects make the two complexes comparable: the town wall of *Baetulum* and the tower built at the same time were made with a dry masonry of irregularly shaped granite blocks, where the larger were placed at the lower levels and at the corners, and the wall had no foundations, being built directly on the clayey soil (Serra 1939: 273). In *Baetulum* there was a constant care for water drainage systems, and, as in *Ammaia*, a ditch ran parallel the outer wall circuit (Serra 1939: 283–284).

In general, the proposed chronology for this monumentalization phase, fixed at the Flavian period (but continuing until the end of the first, if not the beginning of the second, century AD), is well reflected in the excavated data and corresponds well with the analysis of construction techniques (see, *infra*, chapters: III.4–III.9, V.1). Indeed, the huge quantity of fine ware and coarse ware, amphorae, glass and coins that can be attributed to the period between the mid-first and the second half of the second centuries AD is striking, and undoubtedly supports the suggestion of significant activity and dynamic trading in the sector of the Southern Gate.

The present-day gate would have replaced an earlier phase, when the entrance to the town on its southern side was already structured in a passageway flanked by twin structures that, according to the remaining substructures in granite blocks, would have been shaped as a "D", another very common typology in the Roman West (Butler 1983: 128). This earlier phase anticipated the configuration that would be kept in the later phases, when what can be considered the main road—exiting the town heading to the provincial capital *Augusta Emerita*—became the main urban axis (the so-called *decumanus maximus*) and the transition was marked by a monumental single-passageway arched gate.

If we extend to this area the conclusive remarks concerning settlement dynamics involving *Ammaia*'s wall circuit, which draw upon the evidence from excavation in the area of the Museum car park (Corsi 2012b: 41–43), and if we accept the substance of what has been proposed by the archaeologists who worked here, then this gate coexisted with the earliest structures built in the area, which could have been built a couple of decades earlier. If this housing sector can be dated to the beginning of the first century AD, a Claudian date for the construction of the first gate is confirmed as the most likely. Moreover, similar dates are hypothetically attributed to the foundations and erection of walls of *Augusta Emerita*, *Caesarugusta*, *Ilici* (Elche), *Iuliobriga*, *Lucus Augusti* and *Bracara Augusta* (Martín Bueno 1987: 109).

In this case, the surviving bases of the towers, attributed to the first phase, should not be equated to the earliest structures (e.g.: P. 11, P. 12, P. 14, P. 15 and P. 25), but should be considered as a second phase or the second sub-phase of the first. What is remarkable is that here, like in parking area Lot 2, the earliest structures already showed the same 45° NW–SE orientation that would be so characteristic of the town in its hey-day[1]. Remarkably, this same orientation would be respected by all the known structures, with only the exception of wall P. 6, hypothetically included in phase IV.

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[1] Contrary to Pereira, we do not consider that wall P. 6 belongs to this phase, instead we consider it as a later structure.

The second phase, already placed in the Flavian period or more generally in the Flavian-Trajanic period, involved not only a rebuilding of the monumental gate (which, as we saw, maintained the key features of the plan), but also the construction of the paved square and the demolition of surrounding buildings (interpreted as housing structures). The building that did not interfere with the construction of the wide rectangular square, was adapted to the new function of this space and can be interpreted as a market place, given its proximity to the gate and the ease of goods transportation. This suggestion is confirmed by the function of *tabernae* attributed to some of the surrounding spaces (e.g.: C. 11 and C. 19) and is reinforced by the proximity of the complex hypothetically identified as a *macellum* (the so-called *Perystilium*) (Mantas 2000: 414). Furthermore, the function of market and exchange place is confirmed by the huge quantity of coins found in the area, quantity that cannot be justified only by way of the extension of the excavations (see section V.7.a).

Macella were a canonical building type of enclosed (not, as often wrongly worded, "closed") markets, which generally included a square or rectangular open space with shops and porticos on all four sides and a *tholos* in the middle (Sear 1996). This type, which is thought to be the closest to the inspirational model of the Greek commercial agora, particularly common in Anatolia, is an alternative to the type with shops on only three sides (the fourth is just a façade of the building), and to the one axially planned type with a block of rooms positioned opposite the entrance (Sear 1996). Some structural differences have been noted among the *macella* of Italic tradition, the models spread in the eastern provinces and those typical of Roman Africa (Nabers 1977; De Ruyt 1983; Hamdoune 2009), for which a Punic origin has been proposed. Hispanic *macella* began to be the object of specific research in the 1980s (Alarcão 1983) and recently they have been the subject of a doctoral thesis (Torrecilla Aznar 2007). In the Iberian Peninsula, several *macella* are documented in differing degrees of detail: *Carteia*, *Celsa* and Ampurias for the late Republican period, and *Baelo Claudia*, *Bracara Augusta*, *Caesaraugusta*, *Carmo*, *Clunia*, *Complutum*, *Lancia* and *Valentia* for the Imperial period (Diarte Blasco 2012: 263).

Some general features, such as its comparable length (*c*. 100 *pedes* = *c*. 30 m), make the well-known *macellum* of *Baelo Claudia* a very good comparative example (Gros 1996: 460; Didierjean, Ney and Paillet 1986). Built at the end of the first century AD, it was accessible by the main gate on the front and presented ten *tabernae* inside, a *tholos macellum* in the middle and an upper storey (Didierjean, Ney and Paillet 1986; Diarte Blasco 2012: 66–67). The monument of *Ammaia*, however, is rather more similar to the type with shops only on three sides. Moreover, the monument of *Ammaia* does not fit fully within this type as it has been documented in several Hispanic Roman towns, primarily because *macella* usually are topographically related to the forum, often as later additions to the main urban market place, where certain types of trade (such as a food market) would have been relocated to increase the space available for other activities to take place in the forum (Varro, *Log. Hist*. I.2; De Ruyt 1983: Gros 1996: 450–464). This pattern seems to be respected in most Hispanic cases, with the exception of the market of *Valentia*, which is located in the vicinity of the harbour (Torrecillo Aznar 2007: 466).

Furthermore, the interpretation of the geomagnetic anomalies does not suggest the presence of an open courtyard, but rather of a thick spine wall dividing the large inner space into two equal halves (see Fig. 122). At the same time, the interpretation of the central space more as a garden than a paved courtyard and the lack of characteristic features, like the *tholos*, seem to support a different interpretation, even if we cannot exclude the use of this building as market place.

As discussed in further detail below, some interesting observations can be made about the rear wall Pr. 1. The fact that its technique is of a type dated to the Trajanic period (Type Ic; see chapter V.1) seems to reinforce the hypothesis that this monumental complex was fully integrated into the project of remodelling of the Southern Gate area, initiated in the Flavian period and possibly completed only during the reign of Trajan. In this case, a public function should be considered as the most probable.

To reinforce the interpretation that the square attached to the gate functioned as a commercial 'forum', is that some areas were left undeveloped (e.g. C. 18, which was an open space during phases I and II and was only transformed into an indoor area during phase IV) during this most monumental phase of the complex.

Proposing an exact chronology for these modifications is difficult because no stratigraphic information is available. The relatively few archaeological materials from the third and early fourth century AD might indicate that the area was intensively occupied then and that waste material, such as pottery, was properly disposed outside of the inhabited area.

This intensive occupation is confirmed by successive floor levels in most shops (Pereira 2009: 60-61). The finds records which we attach here support occupation into the late fourth century AD and perhaps even the beginning of the fifth century AD. Most strikingly, the installation of a "secondary glass workshop" in the area of the East Tower (square 2537: chapter V.6), which probably was operative in the second half of the fourth century and closed at the latest at the beginning of the fifth century, shows that one of the commonest "reconversion" phenomena of Late Roman towns took place in the area. At that time, we should imagine that the residential functions of the sector were fully replaced by commercial and manufacturing activities. A "Visigoth

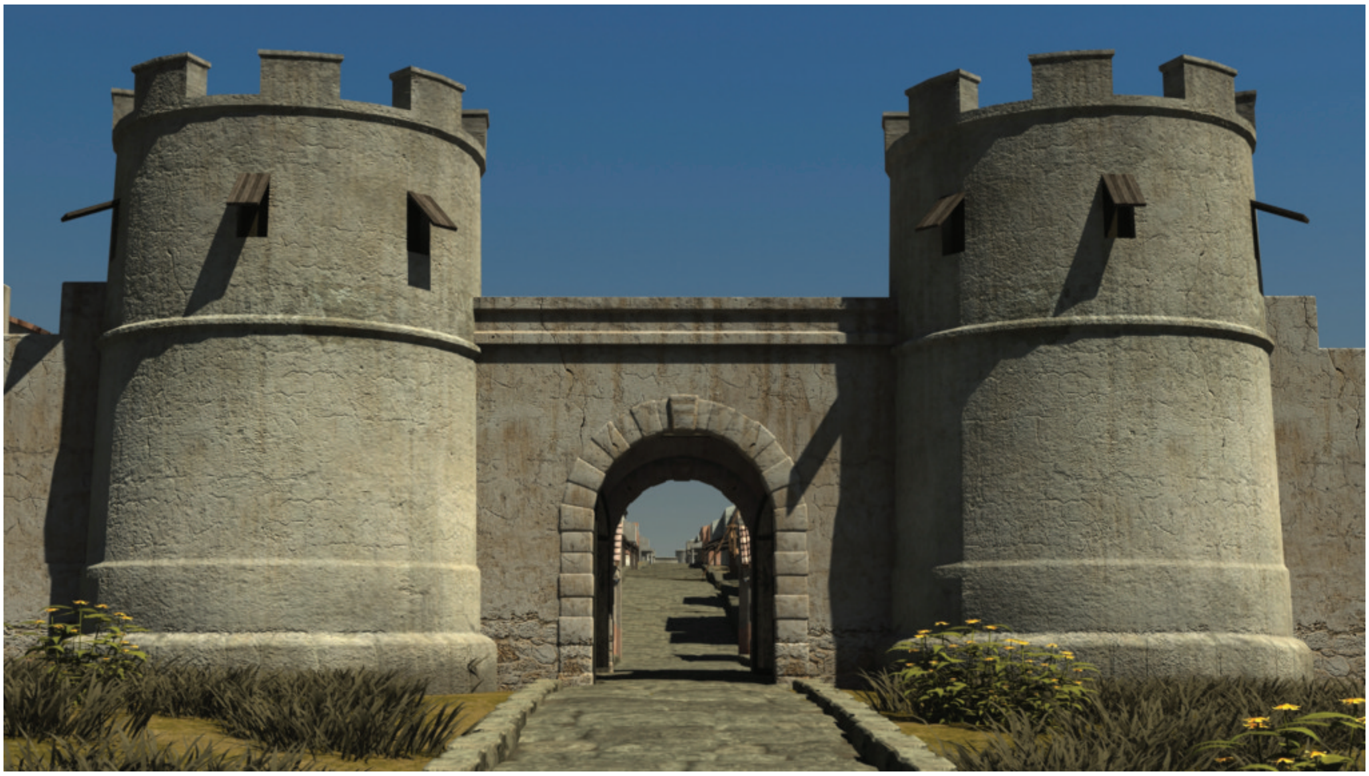

Fig. 128 *Ammaia*, sector B – Southern Gate. 3D reconstruction of the gate with the towers seen from outside the town (elaboration M. Klein, 7Reasons).

phase" can be therefore accepted only if limited to the fifth century, whilst a Moorish occupation, as suggested by Pereira (*supra*), is improbable as the sixth century is represented here only by the latest chronology attributed to the circulation of certain types of amphorae and glass.

At the same time, we are very doubtful that the restoration work was done to the towers in a later (ancient) phase, as we consider the interpretation of the excavations inside the towers to be inconsistent, and that earlier observations misunderstood the "vertical stratigraphy" of the best-preserved walls of the gate, and substantially underestimated the importance of the contemporary (and very poorly documented) reconstruction.

In the end, even if they are often quoted to highlight certain aspects of the discussion, the walls of *Ammaia* are not included among the Late Roman defences of *Lusitani*a in the most recent survey of Adriaan De Man, even if this is mostly because of the lack of scientific documentation that this author experienced while working on the project (De Man 2011: 117, 139, 134, 154, 244).

It is nevertheless true that the Southern Gate falls into the typical model of Late Imperial gates, those which follow the construction of the Aurelian Walls. They are simplified and standardized, and thus overcome the former fragility and permeability of gates with more decorative functions (De Man 2011: 125). Furthermore, *Ammaia*'s gate might be paralleled to the "simplified" Late Galician models where the single and narrow passageway is well protected by salient towers (De Man 2011: 125).

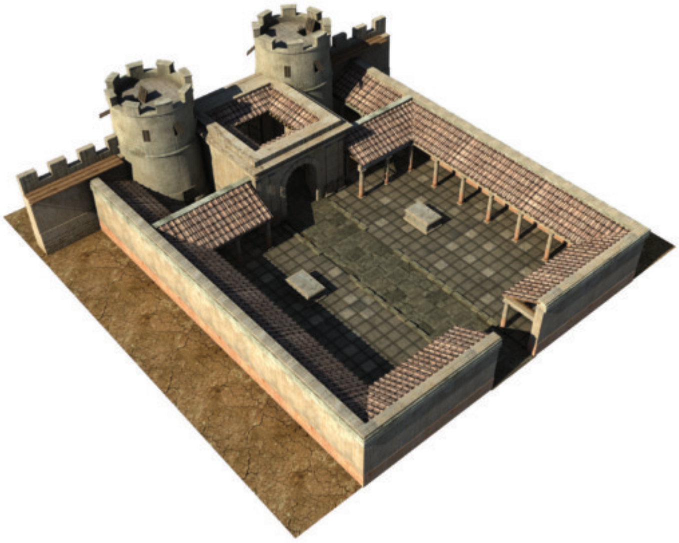

Fig. 129 *Ammaia*, sector B – Southern Gate. 3D reconstruction of the inner side of the gate complex with the paved square, cut in half by the so-called *decumanus maximus*, surrounded by porticoes (elaboration M. Klein, 7Reasons).

The well preserved structures of the Southern Gate complex would have consistently been reused in modern times, when the so-called *Perystilium* would have been installed in the N corner of the by-then abandoned building located W of the gate, to be used more as a *patio* than as a central "pivot" element around which the rooms were distributed. In this sense, the interpretation by S. Pereira (2009: 44), based on some comparisons in the region, of this structure as an “arbor” or “bower”[2], can be surely taken into account to place the aboveground ruins within the context of the modern extensive rural estate of the Quinta do Deão.

Given these considerations, we decided to attempt a 3D reconstruction of the gate on the basis of the (albeit limited) comparative research available (Fig. 128). Apart from the case-studies mentioned above, for the height of the walls and of the towers, we took into account the very well preserved example of the Spanish town of Lugo, ancient *Lucus Augusti* in *Hispania Citerior*, where the height of the walls, 6m thick, ranges from 11 to 14m, and it is clear that the present rampart-walk is very close to how it was configured in the Roman period (Richmond 1931: 86). On the contrary, the walls of *Castra Legionis Septimae Geminae* (León), 25 to 30 feet in height, do not present any trace of an existing rampart-walk or parapet, while their thickness is estimated as 5.50m or more (Richmond 1931: 91)[3]. It is therefore clear, given the lesser thickness of the *ammaiensis* wall, that it had a symbolic role rather than an effective defensive function.

Also, the lack of documentation of the interventions in the area of the gate affected the first 3D reconstruction that we attempted in 2009. In fact, what is presented now as a hollow rectangular space approximately in the middle of the western side of the square, was found originally corresponding to a *caementicium* nucleus (see Fig. 119), and was then attributed to the base of a monument, for which a speculative mirrored counterpart is imagined on the opposite side of the square.

In the volumetric reconstruction of the Southern Gate, we never considered it reliable the repositioning of the column shafts and drums along the line of granite blocks, which border the street that cuts the square in half. Instead, on the basis of the traces left on the surface of the paving blocks (*supra*, chapter III.2), we imagined those columns as displayed along the side wall of the square (P. 5), supporting a single-pitched roof creating a portico (Fig. 129). As noted above (*supra*, chapter III.2), some holes in the joints of the pavement blocks were interpreted as lodgings for wooden or iron posts, where tents for providing shade could have been attached on the hottest days.

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[2] Arbors and bowers are garden features constituted by pergolas forming shaded walkways, passageways, or sitting areas.

[3] These examples do not fit the chronology that we think attributable to *Ammaia*'s walls, for they are all of the third century AD (Richmond 1931: 99–100).

III.4 THE WALL STRUCTURES

Vincenzo E.J. Macchione

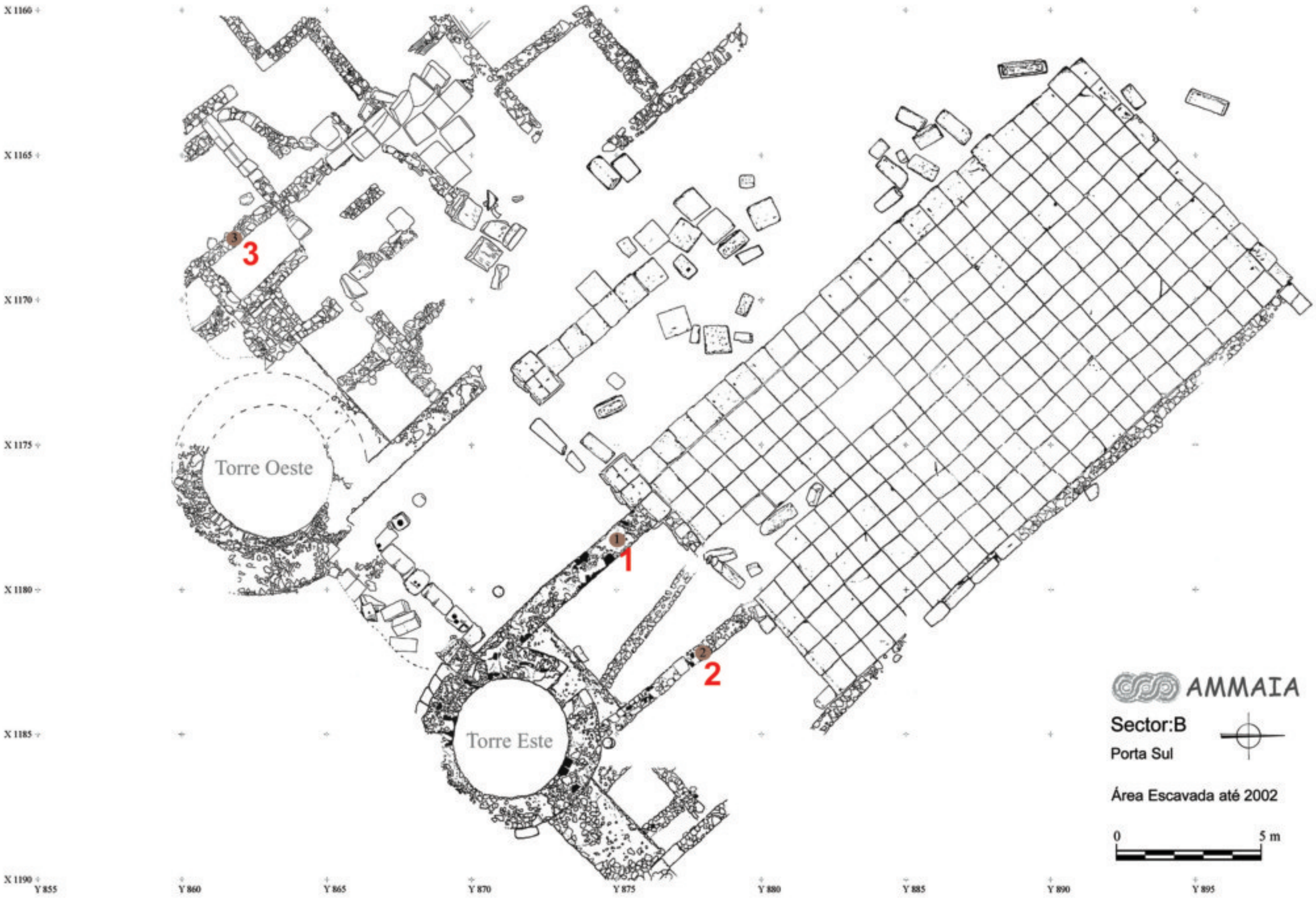

Fig. 130 *Ammaia*, Sector B, Southern Gate. Plan with location of samples: (1 = P4; 2 = P7; 3 = P23) .

SU: P4; Year: 2011; Sector: B; Figs. 130, 242

The masonry is mostly conserved in height, and clearly shows the sequence of the two modules, for a total of four modules: a first module that goes from 0.40 to 0-45m, a second module of 0.50m, another between 0.40 and 0-45m and, finally, a module of 0.50m. Notes: The samples recognised as variation Ic are the interior and outer elevation (at the bottom of the preserved wall) of the West Tower and the SU Pr1 in the "*Peristylium*" area, belonging to the wall which binds with the east Tower and Southern Gate

Binder: the main feature of the sample is the lack of refluent mortar. Stone material: granite.

Type: Ic, characterised by a masonry of irregular stones, wall fillings and rows of brick and shale. The feature that identifies this wall is a regularity always clearer than in Type I.

SU: P7; Year: 2011; Sector: B; Figs. 130, 243

The sample relates to one of the walls delimiting a spaces next to the Western Tower. It is characterised by a technique with predominantly re-used material (limestone, granite, shale) without wall fillings (pseudo *opus africanum*).The external features present irregular courses and split segments. The inner core is composed of segments wedged in with strong presence of quoins. The use of large items such as square blocks should be emphasized, and worked on the visible side, inserted inside the masonry with a static function. Stone material: granite, limestone, shale.

Type: II, characterised by the predominant use of recovery material (limestone, granite, shale) without wall fillings (pseudo *opus africanum*). The inner core is composed of segments wedged in with strong presence of quoins.

SU: P23; Year: 2011; Sector: B; Figs. 130, 244
The sample SU P23 is located N of the Western Tower and is characterised by a masonry technique with mixed material: granite, shale and pebbles. The external wall texture is characterised by irregular courses with split segments. A prevalent use of shale can be noted and this material is very often used in the inner cores of the walls, but in the form of splinters or wedges. The shale, naturally broken in regular slabs, is used with pebbles, to give horizontality to the texture.

Binder: this sample presents a wavy and abundant presence of mortar. Stone material: granite, shale, pebbles.

Type: IIa, characterised by a masonry technique with mixed material: granite, shale and pebbles.

SU: PR1; Year: 2011; Sector: B; see Fig. 241
The sample is divided into modules, thanks to the regularity obtained with rows of shale and clay. The module ranges between 0.40 and 0.45m and between 0.35 and 0.50m; what remains constant (therefore balanced in the sum of two modules) is the total size of two modules, corresponding always to 0.85/0.90m. Notes: the samples classified as variant Ic are the interior and outer elevation (at the bottom of the wall preserved) of the Western Tower and the SU P4. Stone material: granite, shale, pebbles.

Type: Ic, characterised by boulders of irregular stones, wall fillings and rows of brick and shale. The feature that makes this wall distinguishable from the other variants of Type I is the greater regularity.

III.5 THE FINE WARES

José Carlos Quaresma

For abbreviation list see p. 95.

1 - Inv. no. AM-96-B-[Q2537]-1 + 2 + 3 + 5 + 6 + 7 + 8. AM_DR_80_Q2537 (Fig. 131)
Year: 1996. S. 2537. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Measurements: diam. 110, thickness 3-4, lenght 32. Thickned rim. Rouletted decoration on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 64.

2 - Inv. no. AM-01-B-[Q2635]-14 + 15. AM_DR_81_Q2635 (Fig. 131)
Year 2001. S. 2635. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37. Measurements: diam. 100, tickness 3-4, length 33. Thickned rim. Barbotine decoration (scales) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 64.

3 - Inv. no. AM-96-B-[Q2433]-5 + 11. AM_DR_82_Q2433 (Fig. 131)
Year 1996. S. 2433. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 37A. Measurements: diam. 110, thickness 2.5-3, lenght 31. Thickned rim with outer moulding. Barbotine decoration (water leaves) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 64.

4 - Inv. no. AM-96-B-[Q2538]-47 + 48. AM_DR_83_Q2538 (Fig. 131)
Year 1996. S. 2538. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 38. Measurements: diam. 100, thickness 3-4, lenght 36. Thickened rim with two large grooves on the lower part of the wall. Chronology: AD 70-100. Reference: Mayet 1975: 71.

5 - Inv. no. AM-01-B-[Q2533]-17 + 18. AM_DR_84_Q2533 (Fig. 131)
Year 2001. S. 2533. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 38B. Measurements: diam. 95, thickness 3, lenght 35. Carinated vessel. Introverted wall. Barbotine decoration (dots) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 72.

6 - Inv. no. AM-01-B-[Q2733]-18. AM_DR_85_Q2733 (Fig. 131)
Year 2001. S. 2733. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 39. Measurements: diam. 85, thickness 3.5, lenght 12. Simple, round rim. Chronology: AD 70-100. Reference: Mayet 1975: 72.

7 - Inv. no. AM-96-B-[Q2338]-29. AM_DR_86_Q2338 (Fig. 131)
Year 1996. S. 2338. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 41. Measurements: diam. 105, thickness 4-5, lenght 16. Thickned rim. Chronology: AD 70-100. Reference: Mayet 1975: 72.

8 - Inv. no. AM-96-B-[Q2538]-58 + 60 + 62. AM_DR_87_Q2538 (Fig. 131)
Year 1996. S. 2538. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 42. Measurements: diam. 110, thickness 3.5-5, lenght 49. Extroverted, straight rim. Slightly curved wall. Barbotine decoration (scales) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 72.

9 - Inv. no. AM-96-B-[Q2537]-4. AM_DR_88_Q2537 (Fig. 131)
Year 1996. S. 2537. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 40 or 42. Measurements: diam. 105, thickness 4, lenght 6. Bevelled rim. Chronology: AD 70-100. Reference: Mayet 1975: 72.

10 - Inv. no. AM-01-B-[Q2733]-47. AM_DR_89_Q2733 (Fig. 131)
Year 2001. S. 2733. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 43. Measurements: diam. 110, thickness 3-4.5, handle 5.5, lenght 49. Round handle with two external, longitudinal grooves. Thickned rim. Barbotine decoration (scales) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 98.

11 - Inv. no. AM-01-B-[Q2733]-26 + 27. AM_DR_90_Q2733 (Fig. 131)
Year 2001. S. 2733. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 43. Measurements: diam. 100, thickness 3-5, lenght 21. Thickned rim. Rouletted decoration on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 98.

12 - Inv. no. AM-01-B-[Q2635]-2. AM_DR_91_Q2635 (Fig. 131)
Year 2001. S. 2635. Thin walls. Production: *Augusta Emerita*. Shape: Mayet 43. Measurements: diam. 100, thickness 3.5-4, lenght 30. Thickned rim. Rouletted decoration on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 98.

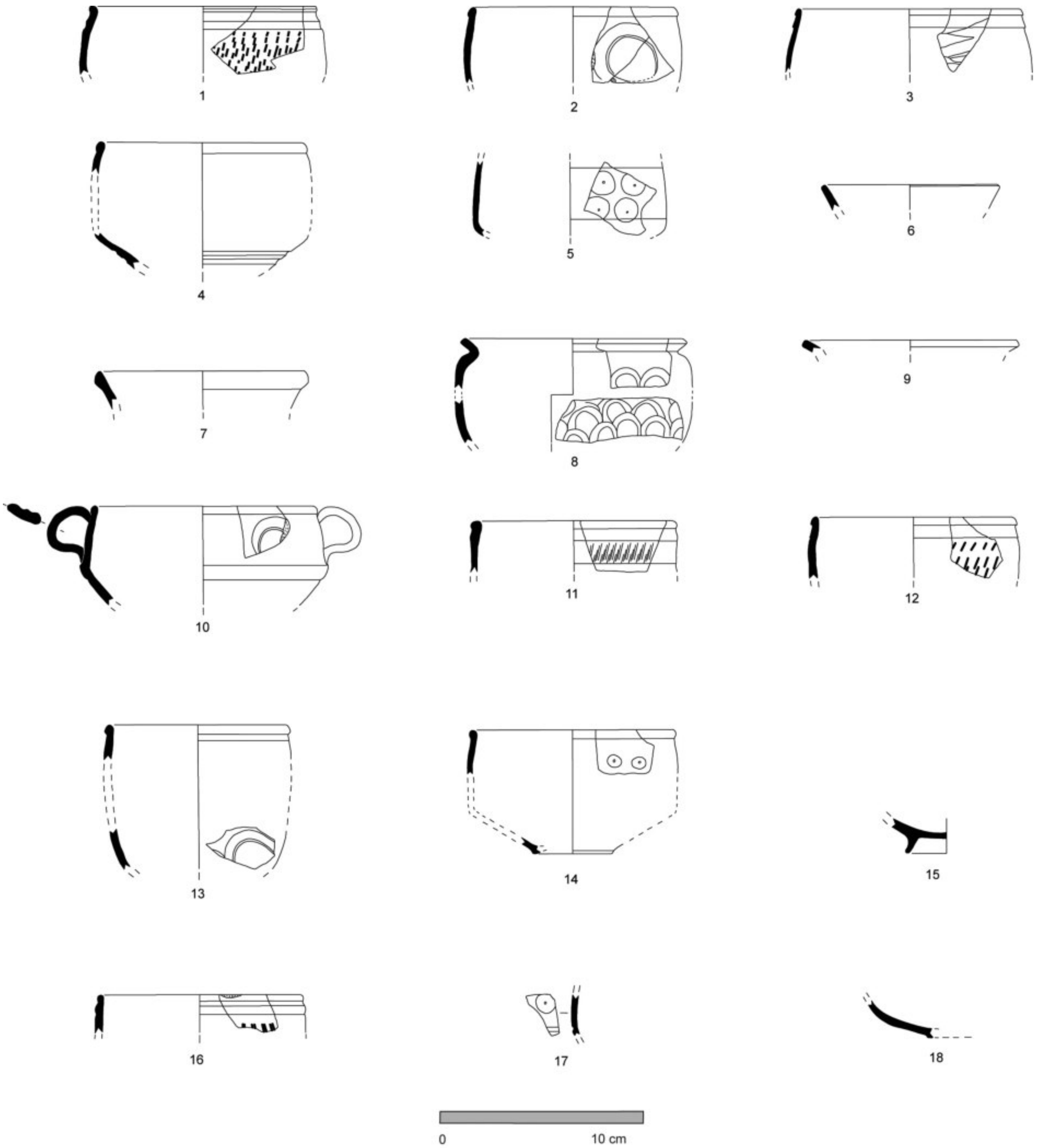

Fig. 131 *Ammaia*, Southern Gate. Thin walls.

13 - Inv. no. 8387 + 8657. AM_DR_92_Q0000 (Fig. 131)
Thin walls. Production: *Baetica*. Shape: Mayet 36. Measurements: diam. 90, thickness 3.5-4, lenght 6. Thickned rim. Barbotine decoration (scales) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 98.

14 - Inv. no. AM-01-B-[Q2634]-7 + 8. AM_DR_93_Q2634 (Fig. 131)
Year 2001. S. 2634. Thin walls. Production: *Baetica*. Shape: Mayet 38B. Measurements: diam. 100, thickness 2.5-3.5, lenght 28. Thickned rim. Low ring-foot. Barbotine decoration (dots) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 72.

15 - Inv. no. AM-01-B-[Q2733]-1. AM_DR_94_Q2733 (Fig. 131)
Year 2001. S. 2733. Thin walls. Production: *Baetica*. Shape: Mayet 53? Measurements: diam. 40, thickness 2.5-4, lenght 27. Wall with sub-rectangular, oblique ring-foot. Chronology: AD 70-100. Reference: Mayet 1975: 114.

16- Inv. no. AM-01-B-[Q2635]-1. AM_DR_95_Q2635 (Fig. 131)
Year 2001. S. 2635. Thin walls. Production: *Hispania*. Group 1a (grey clay). Shape: Mayet 37. Measurements: diam. 100, thickness 3-4, lenght 16. Rim with groove under the rim. Rouletted decoration on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 64.

17 - Inv. no. AM-01-B-[Q2733]-11. AM_DR_96_Q2733 (Fig. 131)
Year 2001. S. 2733. Thin walls. Production: *Hispania*. Groupe 1c (grey clay; orange slip). Shape: Mayet 38B? Measurements: thickness 3, lenght: 19. Curved wall. Barbotine decoration (dots) on the surface. Chronology: AD 70-100. Reference: Mayet 1975: 64.

18 - Inv. no. 2311. AM_DR_97_Q0000 (Fig. 131)
S. 2437. Thin walls. Production: *Hispania*. Groupe 1c (grey clay; orange slip). Shape: Mayet 37. Measurements: thickness 3, lenght 31. Bottom with low ring-foot and curved wall. Chronology: AD 70-100. Reference: Mayet 1975: 64.

19 - Inv. no. AM-01-B-[Q2733]-28. AM_DR_98_Q2733 (Fig. 132)
Year 2001. S. 2733. Lamp. Production: *Augusta Emerita*. Shape: Dr. 9c. Measurements: lenght 45. Sub-triangular noozle. Chronology: AD 70-100. Reference: Bussière 2000: 22.

20 - Inv. no. 2875. AM_DR_99_Q0000 (Fig. 132)
S. 2537. Lamp. Production: *Augusta Emerita*. Volutes-type. Measurements: lenght 44. Round noozle Chronology: AD 70-150. Reference: Bussière 2000: 22.

21 - Inv. no. AM-96-B-[Q2635]-21. AM_DR_100_Q2635 (Fig. 132)
Year 1996. S 2635. Lamp. Production: *Augusta Emerita*. Shape: Volutes-type. Measurements: thickness 2-3.5, lenght 29. Noozle and angular shoulder. 3 grooves between the shoulder and the discus. Chronology: AD 70-150. Reference: Bussière 2000: 22.

22 - Inv. no. AM-96-B-[Q2635]-15. AM_DR_101_Q2635 (Fig. 132)
Year 1996. S. 2635. Lamp. Production: *Augusta Emerita*. Shape: Discus-type. Measurements: thickness 2-5, length 31. Curved shoulder. 1 groove between the shoulder and the discus. Chronology: AD 70-250. Reference: Bussière 2000: 22.

23 - Inv. no. AM-96-B-[Q2433]-2. AM_DR_106_Q2433 (Fig. 132)
Year 1996. S. 2533. Lamp. Production: *Augusta Emerita*. Shape: Discus-type. Measurements: thickness 2-4.5, lenght 21. Curved shoulder. 1 large moulding between the shoulder and the discus. Chronology: AD 70-250. Reference: Bussière 2000: 2.

24 - Inv. no. 2862 + 2863 + 2864 + 2866. AM_DR_103_Q2537 (Fig. 132)
S. 2537. Lamp. Production: *Augusta Emerita*. Shape: Discus-type. Measurements: thickness 2-5, height 33, lenght 47. Curved shoulder. One large moulding between the shoulder and the discus. Stamp on the outer bottom. Potter GABINIA? Chronology: AD 70-250. Reference: Rodríguez Martín 2002: fig. 23.

25 - Inv. no. AM-96-B-[Q2538]-51. AM_DR_104_Q2538 (Fig. 132)
Year 1996. S. 2538. Lamp. Production: *Augusta Emerita*. Shape: Deno. 5G. Measurements: thickness 1.5-3.5, height 29, lenght 54. Curved shoulder with wall and bottom. 1 moulding and 2 grooves between the shoulder and the discus. Ovules-sequence on the shoulder. 2 lateral mouldings. Chronology: AD 70-125. Reference: Bussière 2000: 22.

26 - Inv. no. 2893. AM_PH_537_Q0000 (Fig. 132)
S. 2537. Lamp. Production: *Baetica*. Shape: CV 2/3. Measurements: thickness 5-9, lenght 54. Curved shoulder.Decorated discus with 5 lines of dots. 3 perpendicular mouldings. Chronology: AD 100-300. Reference: Bussière 2000: 22.

27 - Inv. no. AM-96-B-[Q2433]-13. AM_DR_106_Q2433 (Fig. 132)
Year 1996. S. 2433. Lamp. Production: *Baetica*, coastline. Shape: Discus-type. Measurements: thickness 3-5.5, lenght 23. Curved shoulder. 1 large moulding and a narrow one between the shoulder and the discus. Chronology: AD 70-250. Reference: Bussière 2000: 22.

28 - Inv. no. AM-01-B-[Q2734]-5. AM_DR_107_Q2734 (Fig. 132)
Year 2001. S. 2734. Lamp. Production: *Baetica*, coastline. Shape: Volutes-type. Measurements: thickness 1.5-3.5, lenght 12. Angular shoulder. 1 moulding and 2 grooves

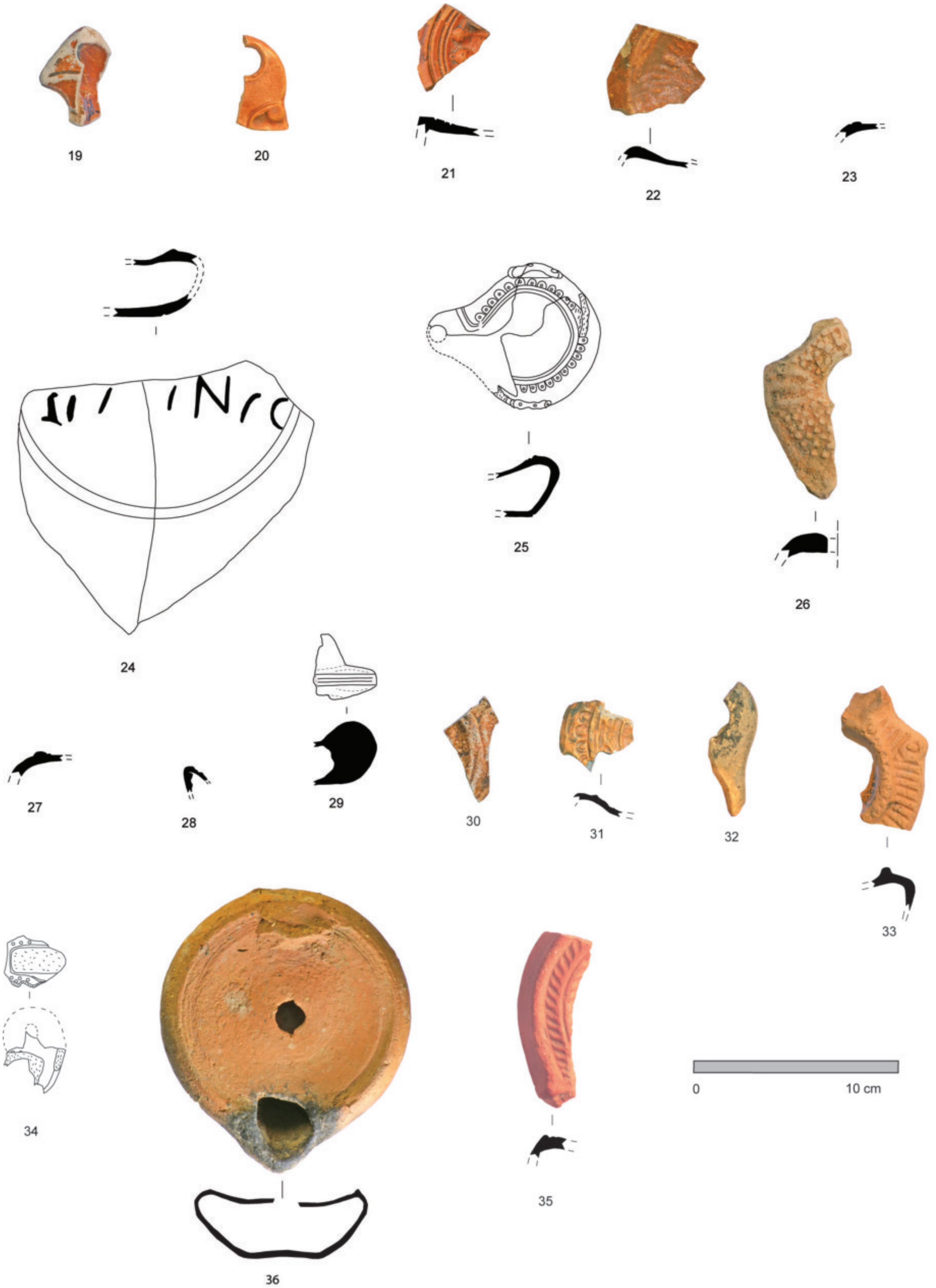

Fig. 132 *Ammaia*, Southern Gate. Lamps.

between the shoulder and the discus. Chronology: AD 70-150. Reference: Bussière 2000: 22.

29- Inv. no. AM-01-B-[Q2734]-6. AM_DR_108_Q2734 (Fig. 132)
Year 2001. S. 2734. Lamp. Production: *Baetica*, coastline. Shape: Discus-type. Measurements: height 29, length 30 Handle with 2 longitudinal grooves on the outrer surface. Chronology: AD 70-250. Reference: Bussière 2000: 22.

30 - Inv. no. AM-01-B-[Q2534]-1. AM_PH_538_Q2534 (Fig. 132)
Year 2001. S. 2534. Lamp. Production: *Hispania*. Group 1a (grey clay). Shape: Volutes-type. Measurements: Lenght 48, height 31. Curved shoulder. Volute. Chronology: AD 70-150. Reference: Bussière 2000: 22.

31 - Inv. no. AM-01-B-[Q2733]-25. AM_PH_539_Q2733 (Fig. 132)
Year 2001. S. 2733. Lamp. Production: *Hispania*. Group 1b (Grey clay; orange surface). Shape: Dr.16/Deno.5D. Measurements: thickness 2-3.5, lenght 32. Curved shoulder with 2 large moulding and 2 large grooves between the shoulder and the discus. Chronology: AD 70-150. Reference: Bussière 2000: 22.

32 - Inv. no. AM-01-B-[Q2734]-9. AM_PH_540_Q2734 (Fig. 132)
Year 2001. S. 2734. Lamp. Production: *Hispania*. Group 2b (Brown-orange clay). Shape: Discus-type. Measurements: lenght 63. Round noozle. Chronology: AD 100-250. Reference: Bussière 2000: 22.

33 - Inv. no. 2855. AM_PH_541_Q2537 (Fig. 132)
S. 2537. Lamp. Production: *Hispania*. Group 1b (Grey clay; orange surface). Shape: Deno. 7B. Measurements: thickness 3-4, length 45. Curved shoulder with 1 large moulding between the shoulder and the discus. Shoulder is decorated with perpendicular grooves. Chronology: AD 70-150. Reference: Bussière 2000: 22.

34 - Inv. no. AM-01-B-[Q2734]-16. AM_DR_113_Q2734 (Fig. 132)
Year 2001. S. 2734. Lamp. Production: *Hispania*. Group 1b (Grey clay; orange surface). Shape: Dr. 30. Measurements: lenght 43, handle widht 8. Handle fragment, preserved only in its basis, with part of the shoulder decorated shoulder with lines of dots. Chronology: AD 150-450. Reference: Bussière 2000: 22.

35 - Inv. no. 8485. AM_PH_542_Q2736. (Fig. 132)
S. 2736. Lamp. Production: Africa, *Byzacena*. Shape: *Atlante* VIIIC. Measurements: thickness 3-6.5, lenght 53. Shoulder. Oblique transition to the wall. Lateral part of the discus is decorated with simetric grooves/mouldings. Chronology: AD 400-500. Reference: Bonifay 2004: 364.

36 - Inv. no. 4431 (Fig. 132)
Lamp. Production: *Hispania*. Group 2b (Brown-orange clay). Shape: Discus-derived type. Measurements: thickness 2.5-3, height 33, width 65. Almost fully preserved lamp with curved shoulder, round noozle and plane discus. Chronology: AD 150-450. Reference: Bussière 2000: 30.

37 - Inv. no. AM-01-B-[Q2533]-28. AM_DR_116_Q2533 (Fig. 133)
Year 2001. S. 2533. *Terra Sigillata*. Production: Italic. Shape: *Conps*. 4. Measurements: diam. 114, thickness 3-5, lenght 12. Rim and curved wall. Pointed rim. Chronology: Augustus-Tiberius. Reference: Ettlinger *et al*. 1990: 58.

38 - Inv. no. 2718. AM_DR_117_Q2637 (Fig. 133)
S. 2637. *Terra Sigillata*. Production: Italic. Shape: *Consp*. 19. Measurements: diam. 210, thickness 4-8, lenght 21. Thickned rim. Outer and inner moulding on the angle of the wall. Chronology: Augustus-Tiberius. Reference: Ettlinger *et al*. 1990: 84.

39 - Inv. no. 8922. AM_DR_118_Q2538 (Fig. 133)
S. 2538. *Terra Sigillata*. Production: Italic. Shape: *Consp*. 33. Measurements: thickness 2.5-6, lenght 18. Rim with inner groove under the rim. Rouletted decoration on the surface. Chronology: Late Augustan – AD 100. Reference: Ettlinger *et al*. 1990: 110.

40 - Inv. no. 1555. AM_DR_119_Q2337 (Fig. 133)
S. 2337. *Terra Sigillata*. Production: Italic. Shape: *Consp*. Ritt. 9. Measurements: diam. 200, thickness 5.5-6.5, length 39. Extroverted rim. Two inner grooves. One outer moulding. Chronology: AD 15-70. Reference: Ettlinger *et al*. 1990: 178.

41 - Inv. no. 96/88. AM_DR_120_Q2438 (Fig. 133)
Year 1996. S. 2438. *Terra Sigillata*. Production:South-Gaulish. Shape: Ritt. 1. Measurements: diam. 170, thickness 2-3.5, lenght 17. Description: Rim with curved wall. One outer groove. Chronology: AD 20-60. Reference: Passelac and Vernhet 1993: 570-578.

42 - Inv. no. 96/117 + 118. AM_DR_121_Q2533 (Fig. 133)
Year 1996. S. 2533. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 15/17. Measurements: diam. 230, thickness 3.5-5, lenght 27. Rim with two outer grooves. A large outer groove under the angle of the wall (with inner moulding). Chronology: AD 30-100. Reference: Passelac and Vernhet 1993: 570-578.

43 - Inv. no. AM-01-B-[Q2533]-30 AM_DR_122_Q2533 (Fig. 133)
Year 2001. S. 2533. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 18. Measurements: diam. 170, thickness 3-4.5, lenght 29. Thickened rim. Curved wall. Chronology: AD 40-125. Reference: Passelac and Vernhet 1993: 570-578.

44 - Inv. no. 2787. AM_DR_123_Q2537 (Fig. 133)
S. 2537. *Terra Sigillata*. Production: South-Gaulish. Shape: Ritt. 8. Measurements: thickness 4-5, lenght 21. Round rim. Slightly angled wall. Chronology: AD 30-80. Reference: Passelac and Vernhet 1993: 570-578.

45 - Inv. no. AM-2449. AM_DR_124_Q2537 (Fig. 133)
S. 2537 *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 24/25. Measurements: diam. 70, thickness 3.5-8, height 32. Rim, wall and bottom with low ring-foot. Rouletted decoration on the outer surface. Chronology: AD 15-120. Reference: Passelac and Vernhet 1993: 570-578.

46 - Inv. no. AM-96-B-[Q2537]-44. AM_DR_125_Q2537 (Fig. 133)
Year 1996. S. 2537. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27b. Measurements: diam. 129, thickness 4-6, lenght 18. Sub-tringular, thickened rim. Chronology: AD 40-120. Reference: Passelac and Vernhet 1993: 570-578.

47 - Inv. no. AM-01-B-[Q2635]-47 + 49. AM_DR_126_Q2635 (Fig. 133)
Year 2001. S. 2635. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 27c. Measurements: diam. 150, thickness 4-5.5, lenght 18. Thickened rim. Chronology: AD 40-120. Reference: Passelac and Vernhet 1993: 570-578.

48 - Inv. no. 1594. AM_DR_127_Q2337 (Fig. 133)
S. 2337. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 33. Measurements: thickness 4-5.5, lenght 40. Plain wall. Slightly bevelled rim. Chronology: AD 60-120. Reference: Passelac and Vernhet 1993: 570-578.

49 - Inv. no. AM-01-B-[Q2533]-21. AM_DR_128_Q2533 (Fig. 133)
Year 2001. S. 2533. *Terra Sigillata*. Production: South-Gaulish. Shape: Drag. 36. Measurements: diam. 200, thickness 4-5, lenght 42. Rim with curved, hanging lip. Barbotine decoration (water leaves) on the lip. Chronology: AD 60-125. Reference: Passelac and Vernhet 1993: 570-578.

50 + 51 - Inv. no. AM-01-B-[Q2733]-82. AM_PH_544_Q2733 (Fig. 133)
Year 2001. Provenance: s. 2733. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 37a. Measurements: diam. 230, thickness 5-7, length 54. Thickened rim. Four grooves on the outer wall. Ovules line above metoped decoration (vegetal). Panels are divided by vertical wavy lines. Chronology: AD 60-125. Reference: Passelac and Vernhet 1993: 570-578.

52 - Inv. no. AM-01-B-[Q2635]-31. AM_PH_545_Q2635 (Fig. 133)
Year 2001. S. 2635. *Terra Sigillata*. Production: South-Gaulish. Measurements: thickness 5, lenght 51. Wall with metoped decoration with human figure turned on the left. Wavy lines delineate the panel. Chronology: AD 40-80. Reference: Passelac and Vernhet 1993: 570-578.

53 - Inv. no. AM-01-B-[Q2733]-68. AM_DR_131_Q2733 (Fig. 134)
Year 2001. Provenance: s. 2733. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 15/17. Measurements: diam. 290, thickness 4.5-7, lenght 72. Plain wall with two outer grooves. A large outer groove and large inner moulding at the angle of the wall. Chronology: AD 70-200.Reference: Mayet 1984: 69.

54 –Inv. no. 8425. AM_DR_132_Q0000 (Fig. 134)
Terra Sigillata. Production: Hispanic - La Rioja. Shape: Drag.18. Measurements: thickness 4-5.5, lenght 29. Slightly thickened rim. Chronology: AD 70-200. Reference: Mayet 1984: 69.

55 – Without inv. NO. AM_DR_133_Q0000 (Fig. 134)
Terra Sigillata. Production: Hispanic - La Rioja. Shape: Drag.27. Measurements: diam. 93, thickness 4-9, height 44. Round rim. Triangular ring-foot. Chronology: AD 70-200. Reference: Mayet 1984: 69.

56 - Inv. no. AM-99-B-[Q2633]-66. AM_DR_134_Q2633 (Fig. 134)
Year 1999. Provenance: s. 2633. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 33. Measurements: diam. 139, thickness 3-4.5, height 39. Slightly thickened rim. Sub-rectangular ring-foot. Chronology: AD 70-200. Reference: Mayet 1984: 69.

57 - Inv. no. AM-96-B-[Q2537]-47. AM_DR_135_Q2537 (Fig. 134)
Year 1996. Provenance: s. 2537. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 35. Measurements: diam. 130, thickness 3.5-8, lenght 27. Rim with curved, hanging lip. Barbotine decoration (water leaves) on the lip. Chronology: AD 70-200.Reference: Mayet 1984: 69.

58 - Without inv. No. AM_DR_136_Q0000 (Fig. 134)
Terra Sigillata. Production: Hispanic - La Rioja. Shape: Drag. 46. Measurements: diam. 189, thickness 3.5-5, lenght 35. Bevelled rim. Outer groove on the angle of the wall. Chronology: AD 70-200. Reference: Mayet 1984: 69.

59 - Inv. no. 8899 + 8909. AM_DR_138_Q2736 (Fig. 134)
S. 2736. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Hisp. 70. Measurements: diam. 160, thickness 4-5, lenght 37.Sub-rounded rim. Curved wall. Chronology: AD 80-120. Reference: Mayet 1984: 69.

60 - Inv. no. 1608. AM_DR_137_Q2337 (Fig. 134)
S. 2337. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 30. Measurements: diam. 190, thickness 6-8, lenght 35.Rim with outer groove under the rim. Upper segment of concentric circles. Metoped decoration. Vertical wavy lines. Chronology: AD 70-200. Reference: Mayet 1984: 81.

61 - Inv. no. AM-01-B-[Q2634]-40. AM_PH_546_Q2634 (Fig. 134)
Year 2001. S. 2634. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 37a. Measurements: diam. 210, thickness 6-8, lenght 70. Thickened rim. Large outer moulding. Decoration: Two decoration zones with large concentric circles. Chronology: AD 70-200. Reference:Mayet 1984: 81.

62 - Inv. no. AM-03-B-[Q2735]-25. AM_DR_140_Q 2735. (Fig. 134)
Year 2003. S. 2735. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Drag. 37b. Measurements: diam. 280, thickness 6.5-11, lenght 41. Thickened rim. Upper decoration zone with small concentric circles. Chronology: AD 70-200. Reference: Mayet 1984: 81.

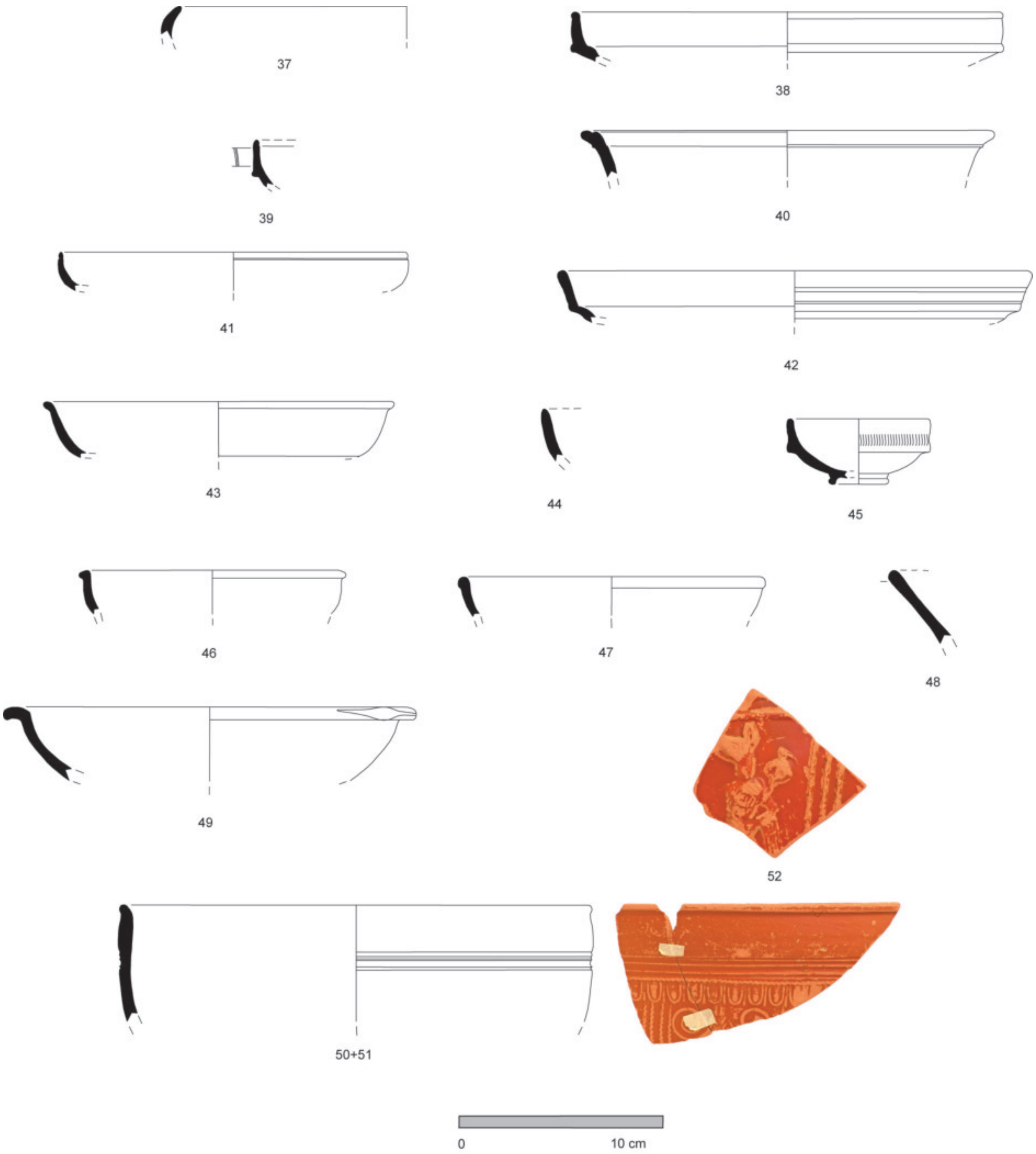

Fig. 133 *Ammaia*, Southern Gate. Early-imperal *Terra sigillata*.

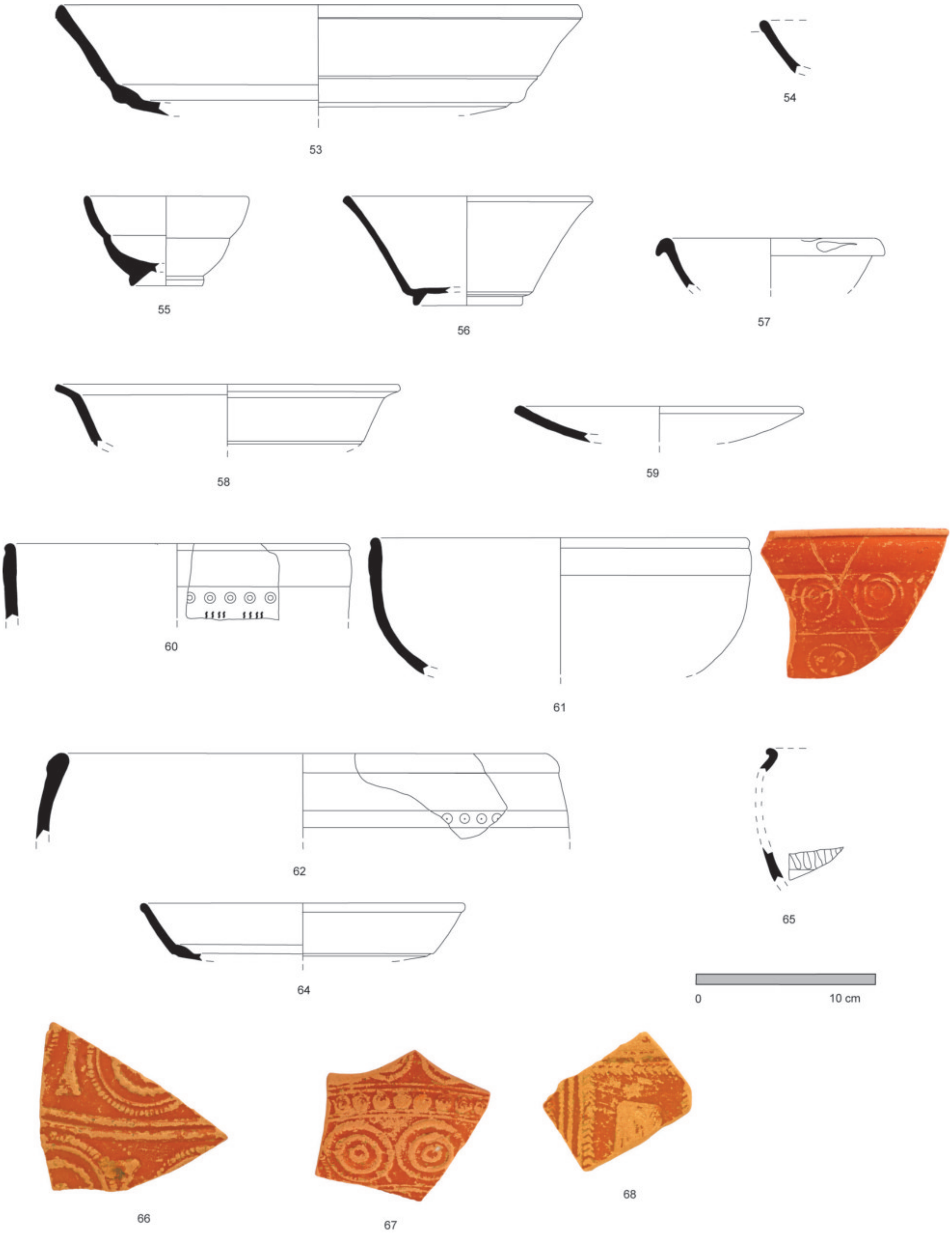

Fig. 134 *Ammaia*, Southern Gate. Early-Imperial *Terra sigillata.*

64 - Inv. no. AM-99-B-[Q2735]-45. AM_DR_142_Q 2735 (Fig. 134)
Year 1999. S. 2735. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 15/17. Measurements: diam. 180, thickness 4.5-6, lenght 42. Slightly thickened rim. Outer groove and inner moulding at the angle of the wall. Chronology: AD 70-200. Reference: Mayet 1984: 45.

65 – Without inv. no. AM_DR_143_Q 0000 (Fig. 134)
Terra Sigillata. Production: Hispanic - Andújar. Shape: Hisp. 2. Measurements: thickness 4-5, lenght 24. Extroverted rim. Curved, deep wall. Barbotine decoration (vertical motifs sequence) on the lower part of the wall. Chronology: AD 70-200. Reference: Mayet 1984: 45.

66 - Inv. no. AM-01-B-[Q2733]-78. AM_PH_548_Q2733 (Fig. 134)
Year 2001. S. 2733. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 37. Measurements: thickness 4.5, lenght 55. Curved wall. Two decoration zones with large concentric circles separated by vertical motifs, at least in the upper zone. Chronology: AD 70-200. Reference: Mayet 1984: 49.

67 - Inv. no. AM-01-B-[Q2634]-35. AM_PH_549_Q2634 (Fig. 134)
Year 2001. S. 2634. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 37. Measurements: thickness 5, lenght 56. Curved wall. Two principal decoration zones with large concentric circles separated by a narrow zone with small concentric circles. Chronology: AD 70-200. Reference: Mayet 1984: 49.

68 - Inv. no. AM-01-B-[Q2635]-26. AM_PH_550_Q2635 (Fig. 134)
Year 2001. S. 2635. *Terra Sigillata*. Production: Hispanic - Andújar. Shape: Drag. 30. Measurements: thickness 5, lenght 51. Vertical wall. Metoped decoration. Wavy lines delineate the panel. Chronology: AD 70-200. Reference: Mayet 1984: 49.

69 - Inv. no. AM-99-B-[Q2735]-44. AM_DR_147_Q2735 (Fig. 135)
Year 1999. S. 2735. *Terra Sigillata*. Production: Hispanic - Granada. Shape: Drag. 15/17. Measurements: diam. 230, thickness 4-5, lenght 21. Thickned rim with outer almond shape. Chronology: AD 70-200. Reference: Mayet 1984: 28.

70 - Inv. no. AM-99-B-[Q2735]-40. AM_DR_148_Q2735 (Fig. 135)
Year 1999. S. 2735. *Terra Sigillata*. Production:Hispanic-Granada. Shape: Plate. Measurements: thickness 6-7, lenght 46. Carinated plate with rouletted inner bottom. Chronology: AD 70-200. Reference: Mayet 1984: 28.

71 – Without inv. NO. AM_DR_149_Q0000 (Fig. 135)
Terra Sigillata. Production: Hispanic - *Augusta Emerita*. Shape: Drag. 15/17. Measurements:diam. 219, thickness 3.5-5, lenght 25. Slightly thickned rim with outer almond shape. Chronology: AD 70-200. Reference: Rodríguez Martín 1996: 151.

72 - Inv. no. AM-96-B-[Q2735]-38. AM_DR_150_Q2735 (Fig. 136)
Year 1996. S. 2735. *Terra Sigillata*. Production: African C. Shape: Hayes 44. Measurements: diam. 250, thickness 4, lenght 18. Rim fragment with one groove on the lip. Chronology: AD 200-300. Reference: Hayes 1972: 61.

73 - Inv. no. 96/60. AM_DR_151_Q0000 (Fig. 136)
Year 1996. *Terra Sigillata*. Production: African C. Shape: Hayes 48B. Measurements: diam. 360, thickness 4-6, lenght 35. Bevelled rim. Oblique lip. Chronology: AD 260-320. Reference: Hayes 1972: 68.

75 - Inv. no. 8573. AM_DR_153_Q0000 (Fig. 136)
S. 2538. *Terra Sigillata*. Production: African C. Shape: Hayes 53. Measurements: diam. 190, thickness 3, lenght 36. Rim and wall with two inner grooves. Chronology: AD 350-430. Reference: Hayes 1972: 79.

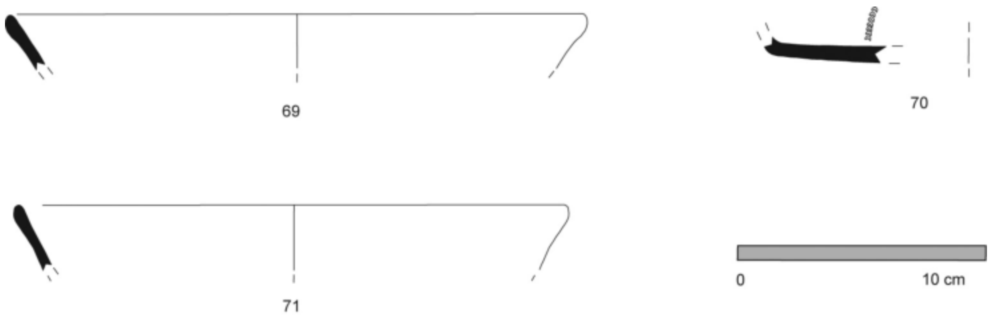

Fig. 135 *Ammaia*, sector B – Southern Gate. Early-Imperial *Terra sigillata*.

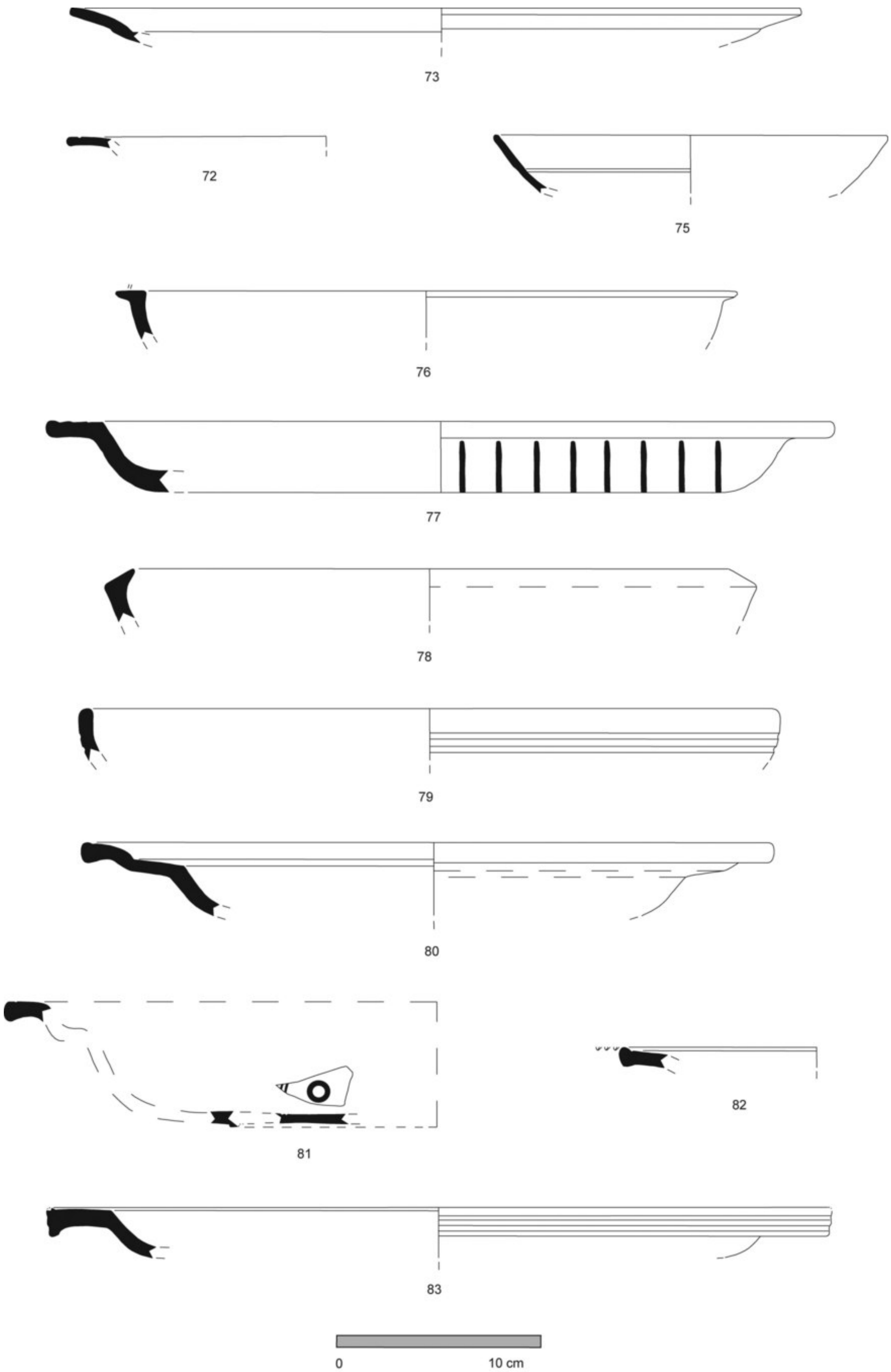

Fig. 136 *Ammaia*, Southern Gate. Late Imperial and Late-Roman *Terra sigillata*.

76 - Inv. no. AM-01-B-[Q2734]-48. AM_DR_154_Q2734 (Fig. 136)
Year 2001. S. 2734. *Terra Sigillata*. Production: African D1. Shape: Hayes 58B. Measurements: diam. 300, thickness 6-7, lenght 24. Rim with horizontal lip with two upper grooves. Chronology: AD 300-420. Reference: Hayes 1972: 93.

77 - Inv. no. AM-01-B-[Q2534]-13. AM_DR_155_Q2534 (Fig. 136)
Year 2001. S. 2534. *Terra Sigillata*. Production: African D1. Shape: Hayes 59A. Measurements: diam. 380, thickness 7-10, lenght 68. Rim with horizontal lip with 3 uper grooves. Vertical gouging on the outer wall. Chronology: AD 330-420. Reference: Hayes 1972: 96.

78 - Inv. no. 3109. AM_DR_156_Q0000 (Fig. 136)
S. 2537. *Terra Sigillata*. Production: African D1. Shape: Hayes 61A. Measurements: diam. 290, thickness 3-7, lenght 22. Introverted, bevelled rim. Chronology: AD 340-420. Reference: Hayes 1972: 104.

79 - Inv. no. AM-96-B-[0]-1. AM_DR_157_SU0 (Fig. 136)
Year 1996. SU 0. *Terra Sigillata*. Production: African D1. Shape: Hayes 63. Measurements: diam. 340, lenght 19. Thickned round rim. Two outer grooves on the wall. Chronology: AD 375-400. Reference: Hayes 1972: 109.

80 - Inv. no. 96/14+16. AM_DR_158_Q2533 (Fig. 136)
Year 1996. S. 2533. *Terra Sigillata*. Production: African D1. Shape: Hayes 67A. Measurements: diam. 340, thickness 4.5-8, lenght 74. Thickened rim with upper groove. Chronology: AD 350-400. Reference: Hayes 1972: 112.

81 - Inv. no. AM-01-B-[Q2534]-10+11. AM_DR_159_Q2534 (Fig. 136)
Year 2001. S. 2534. *Terra Sigillata*. Production: African D1. Shape: Hayes 67B. Measurements: diam. 420, thickness 4.5-8, lenght 60. Thickened rim with upper groove. Low ring-foot. Stamped decoration in the inner bottom: concentric circles - Style A(ii)-(iii). Chronology: AD 380-450. Reference: Hayes 1972: 112.

82 - Inv. no. AM-01-B-[Q2633]-68. AM_DR_160_Q2633 (Fig. 136)
Year 2001. S. 2633. *Terra Sigillata*. Production: African D1. Shape: Hayes 73. Measurements: diam. 190, thickness 6-9, lenght 21. Thickened, notched rim and slightly oblique lip. Chronology: AD 425-475. Reference: Hayes 1972: 121.

83 - Inv. no. AM-99-B-[Q2634]-15. AM_DR_161_Q2634 (Fig. 136)
Year 1999. S. 2634. *Terra Sigillata*. Production: African D1. Shape: Hayes 76. Measurements: diam. 380, thickness 6-9, lenght 54. Thickened rim with horizontal lip and two outer grooves. Chronology: AD 425-475. Reference: Hayes 1972: 125.

84 - Inv. no. AM-95-B-[Q2337]-20. AM_DR_162_Q2337 (Fig. 137)
Year 1995. S. 2337. *Terra Sigillata*. Production: African D1. Shape: Hayes 91B. Measurements: diam. 250, thickness 5-11, lenght 18. Simple rim and horizontal flange with hanging lip. Chronology: AD 420-530. Reference: Hayes 1972: 140.

85 - Inv. no. AM-99-B-[Q2634]-16. AM_DR_163_Q2634 (Fig. 137)
Year. S. 2634. *Terra Sigillata*. Production: African D1. Measurements: thickness 4, lenght 33. Horizontal bottom fragment. Palm-leaf and grill stamped on the inner bottom - Style A(ii)-(iii). Chronology: AD 380-450. Reference: Hayes 1972: 219.

86 - Inv. no. 8539. AM_PH_551_Q0000 (Fig. 137)
Terra Sigillata. Production: African D1. Measurements: thickness 4, lenght 34. Horizontal bottom fragment. Large concentric circle and rosette stamped on the inner bottom - Style A(i)-(ii). Chronology: AD 320-350.nReference: Hayes 1972: 219.

87 - Inv. no. 1665. AM_DR_165_Q2437 (Fig. 137)
S. 2437. *Terra Sigillata*. Production: Late Hispanic – Douro. Shape: Lud. Tb. Measurements: diam. 100, thickness 5-8, lenght 39. Curved wall with extroverted rim. Chronology: AD 250-375. Reference: Hayes 1972: 219.

88 - Inv. no. AM-01-B-[Q2733]-74. AM_DR_166_Q2733 (Fig. 137)
Year 2001. S. 2733. *Terra Sigillata*. Production: Late Hispanic – Douro. Shape: Hisp. 7a. Measurements: thickness 5-7, lenght 57. Slightly bevelled rim. Concave wall. Chronology: AD 250-400. Reference: Paz Peralta 2008: 529.

89 - Inv. no. 2888. AM_DR_167_Q2537 (Fig. 137)
S. 2537. *Terra Sigillata*. Production: Late Hispanic – Douro. Shape: Hisp. 7b. Measurements: diam. 260, thickness 6-8, lenght 25. Slightly thickened rim. Curved wall. Chronology: AD 250-400. Reference: Paz Peralta 2008: 529.

90 - Inv. no. 96/69+70+71+72. AM_DR_168_Q2438 (Fig. 137)
Year 1996. S. 2438. *Terra Sigillata*. Production: Late Hispanic – Douro. Shape: Palol 4. Measurements: diam. 250, thickness 6-9.5, lenght 55. Slightly hanging lip with thickened rim. Chronology: AD 375-500.
Reference: Paz Peralta 2008: 529.

91 - Inv. no. AM-01-B-[Q2734]-49. AM_DR_169_Q2734 (Fig. 137)

Year 2001. S. 2734. *Terra Sigillata*. Production: Late Hispanic – Douro. Shape: Hisp. 83b. Measurements: diam. 280, thickness 3-6, lenght 17. Thickned rim in the outer face. Chronology: AD 400-500. Reference: Paz Peralta 2008: 529.

92 - Inv. no. 8523. AM_DR_170_Q2735 (Fig. 137)
S. 2735. *Terra Sigillata*. Production: Late Hispanic–Douro. Shape: Hisp. 82A. Measurements: diam. 240, thickness 3-5, lenght: 37. Slightly carinated wall with pointed rim. Chronology: AD 325-375. Reference: Paz Peralta 2008: 529.

93 - Inv. no. 2712 + 2720. AM_DR_171_Q2637 (Fig. 137)
S. 2637. *Terra Sigillata*. Production: Late Hispanic–Douro. Shape: Palol 2. Measurements: diam. 230, thickness 4-10, lenght: 27. Sub-tringular rim with hanging lower part. Chronology: AD 350-500. Reference: Paz Peralta 2008: 529.

94 - Inv. no. 1694 + 1695. AM_DR_172_Q2437 (Fig. 137)
S. 2437. *Terra Sigillata*. Production: Late Hispanic–Douro. Shape: Drag. 37t – Style 2. Measurements: diam. 180, thickness 4-6, lenght: 97. Slightly bevelled rim. Outer wall decorated with two zones of circles. The upper one contanis simples, secant circles. The lower one contains jagged circles with inner normal circle. Chronology: AD 350-500. Reference: Paz Peralta 2008: 529.

95 - Inv. no. 5592. AM_DR_173_Q2634 (Fig. 137)
S. 2634. *Terra Sigillata*. Production: Late Hispanic–Douro. Shape: Drag. 37t. Measurements: diam. 200, thickness 3-5, lenght: 26. Thickned rim. Rouletted decoration on the outer wall. Chronology: AD 350 500. Reference: Paz Peralta 2008: 529.

96 - Inv. no. 2719. AM_PH_552_2637 (Fig. 137)
S. 2637. *Terra Sigillata*. Production: Late Hispanic–Douro. – Style 1. Measurements: thickness 4, lenght: 18. Horizontal bottom. Stamped decoration on the inner bottom: repeated motif of a small cross inside a circle. Chronology: 350-500 AD. Reference: Paz Peralta 2008: 529.

97 - Inv. no. 8674. AM_PH_553_Q2736 (Fig. 137)
S. 2736. *Terra Sigillata*. Production: Late Hispanic–Douro. Style 2. Measurements: thickness 4mm, lenght: 22. Curved wall. 8 petals-rosette inside a circle. Chronology: AD 350-500. Reference: Paz Peralta 2008: 529.

98 - Inv. no. 463. AM_PH_554_Q0000 (Fig. 137)
Terra Sigillata. Production: Late Hispanic–Douro. – Style 2. Measurements: thickness 5, lenght: 66. Curved wall. Large secant circles delineated by 2 lines of scales and 3 normal lines. Chronology: AD 350-500. Reference: Paz Peralta 2008: 529.

99 - Inv. no. 2772. AM_PH_555_Q2537 (Fig. 137)
S. 2537. *Terra Sigillata*. Production: Late Hispanic–Douro. - Style 2. Measurements: thickness 5, lenght: 72. Curved wall. Large 6 petals-rosette inside a circle.Chronology: AD 350-500. Reference: Paz Peralta 2008: 529.

100 - Inv. no. 1486. AM_DR_178_Q2437 (Fig. 137)
S. 2437. *Terra Sigillata*. Production: Late Hispanic–Ebro. Shape: Ritt. 8a. Measurements: diam. 160, thickness 3-5, lenght: 31. Pointed, introverted rim. Chronology: AD 250-400. Reference: Paz Peralta 2008: 529.

101 - Inv. no. 1488. AM_DR_179_Q2437 (Fig. 137)
S. 2437. *Terra Sigillata*. Production: Late Hispanic–Ebro. Shape: Drag. 24/25. Measurements: diam. 160, thickness 6, lenght: 38. Rolled rim. Developed and almost vertical upper quartel of circle. Chronology: AD 250-350. Reference: Paz Peralta 2008: 529.

102 - Inv. no. AM-99-B-[Q2735]-39. AM_DR_180_Q2735 (Fig. 138)
Year 1999. S. 2735. *Terra Sigillata*. Production: Hispanic-La Rioja. Shape: Plate. Potter Flaccus Tritiensis[1]. Measurements: thickness 3, lenght: 36. Simple, bottom fragment with rectangular impression. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 101.

103 - Inv. no. AM-01-B-[Q2733]-51. AM_DR_181_Q2733 (Fig. 138)
Year 2001. S. 2733. *Terra Sigillata*. Production: Hispanic-La Rioja. Shape:Drag. 15/17. Potter Lapillius[2]. Measurements: thickness 3, lenght: 39. Simple, bottom fragment with rectangular impression with concave minor sides. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 106.

104 - Without inv. NO. AM_DR_182_Q0000 (Fig. 138)
Terra Sigillata. Production: Hispanic-La Rioja. Shape: cup. Measurements: thickness 3, lenght: 43. Simple, bottom fragment with rectangular impression with concave minor sides[3]. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 88.

105 - Inv. no. 6911. AM_DR_183_Q2736 (Fig. 138)
S. 2736. *Terra Sigillata*. Production: Hispanic-La Rioja.

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[1] Flaccus Tritiensis is also present at the Suburbio Norte of *Augusta Emerita* between AD 70 and 100 (Bustamante Álvarez 2010: 759), as well as in a dump layer from the second half of the second century in Valencia (Huguet Enguita 2005: 184; Quaresma 2012: 153).

[2] Note that the stamp presents the gentive form Lapilli.

[3] The stamp is read EX OF O.N. It seems far from the graphy of Andújar's potters as OF NA (Saénz Preciado and Saénz Preciado 1999).

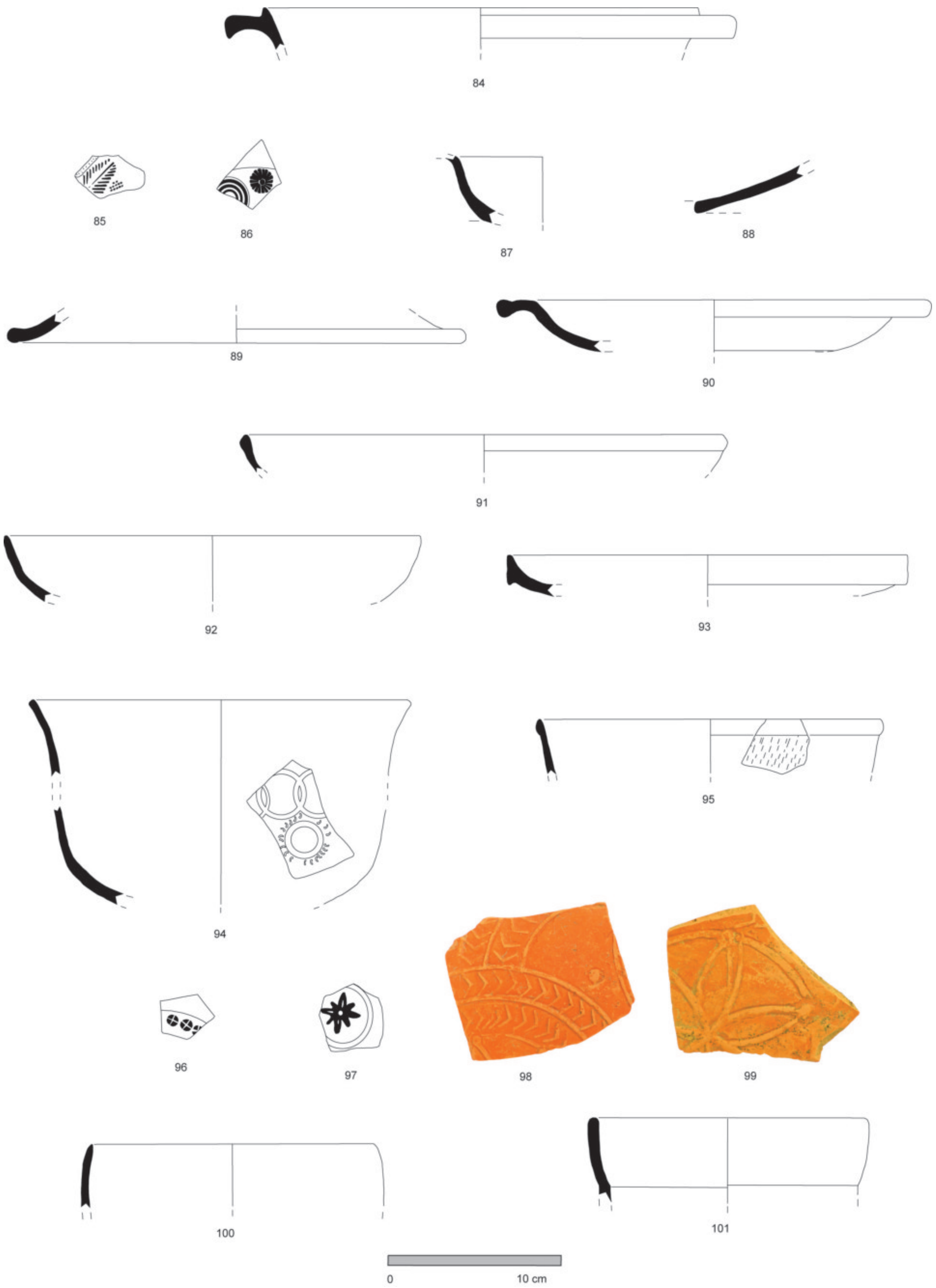

Fig. 137 *Ammaia*, Southern Gate. Late Imperial and Late-Roman *Terra Sigillata*.

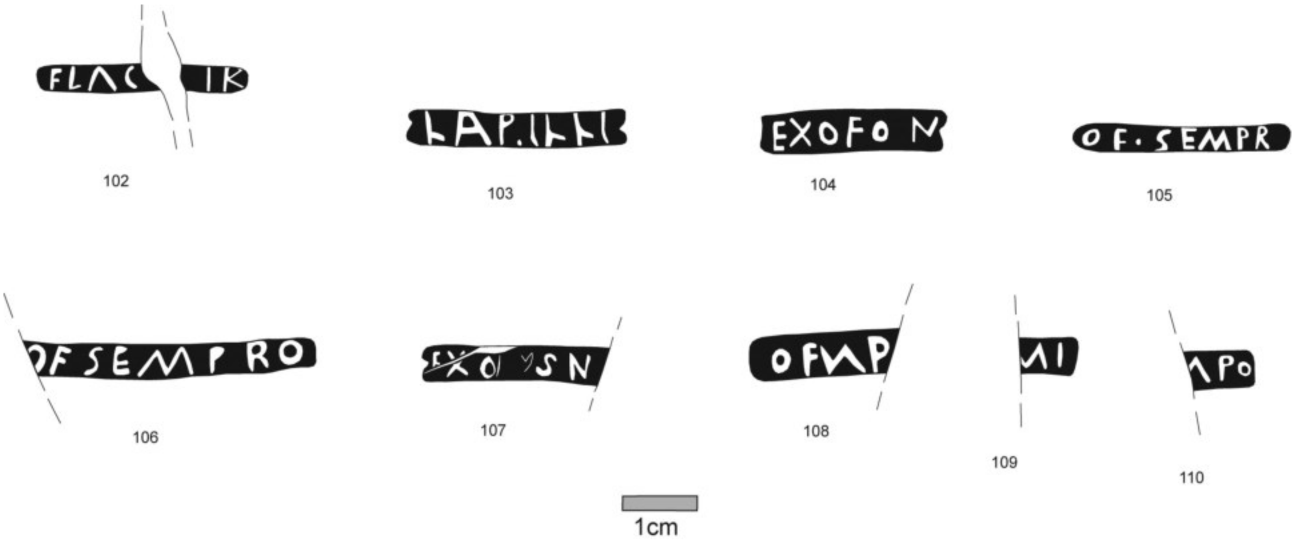

Fig. 138 *Ammaia*, Southern Gate, Early Imperial *Terra Sigillata*'s potter stamps.

Shape: Drag. 18. Potter Sempronius[4]. Measurements: thickness 3, lenght: 46. Simple, bottom fragment with rectangular impression. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 124.

106 - Inv. no. 6908. AM_DR_184_Q2538 (Fig. 138)
S. 2538. *Terra Sigillata*. Production: Hispanic-La Rioja. Shape: Drag. 15/17. Potter Sempronius (see no. 105). Measurements: thickness 3. Simple, bottom fragment with irregular, rectangular impression. Chronology: AD 70-200. Lenght: 54. Reference: Saénz Preciado and Saénz Preciado 1999: 124.

107 - Without inv. NO. AM_DR_185_Q0000 (Fig. 138)
Terra Sigillata. Production: Hispanic-La Rioja. Shape: cup. Potter S( ) NI( )[5]. Measurements: thickness 3. Simple, bottom fragment with irregular, rectangular impression with concave minor sides. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 126.

108 - Inv. no. AM-01-B-[Q2635]-51. AM_DR_186_Q2653 (Fig. 138)
Year 2001. S. 2635. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape:Drag. 15/17. Potter Valerius Paternus[6]. Measurements: thickness 3, lenght: 49. Simple, bottom fragment with rectangular impression. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 131.

109 - Inv. no. 6915. AM_DR_188_Q2736 (Fig. 138)
S. 2736. *Terra Sigillata*. Production: Hispanic - La Rioja. Shape: Cup. Potter MEM( ) MI( ) or Firmus[7]. Measurements: Thickness 3mm. Lenght: 31. Simple, bottom fragment with rectangular impression. Chronology: AD 70-200. Reference: Saénz Preciado and Saénz Preciado 1999: 112.

110 – Without inv. NO. AM_DR_189_Q0000 (Fig. 138)
Terra Sigillata. Production: Hispanic - Andújar. Shape: Cup. Potter NAP( ) or NPNA (see no. 105). Measurements: thickness 3, lenght: 28. Simple, bottom fragment with rectangular impression. Chronology: AD 70-200. Reference: Mayet 1984: 156.

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[4] Saénz Preciado and Saénz Preciado 1999. It could be paralleled with no. 110, where we find NAP[-] or NPNA. Sempronius has never the text OF SEMPO, rather the texts OF SEMPRO or OF SEMPR (Saénz Preciado and Saénz Preciado 1999). This stamp's clay has been classed as an Andújar's production, in spite of this potter is only known at La Rioja. We must however wonder if it is maybe a coarser clay from *Tarraconensis*.

[5] This stamp contains a similar S and the same impression than the one descripted by F. Mayet (1984: 75-76).

[6] The stamp presents the letters V and A in a geminated position. In *Augusta Emerita*, this potter has been dated at the principate of Hadrian (Bustmante Álvarez 2010: 695).

[7] Here the final MI can be related to the potters MEM ( ) MI ( ) or Firmus (Boube 1968-72: 77, 81-82, fig. 2; 1965: fig. 24, no. 61. Apud Bustamante 2010: 520). A potter called Firmus i has worked at La Graufesenque between AD 30 and 95, according to Hofmann (*s.d.*: 16). Polak (2000: 227) puts back the end of his activity to AD 60/65, whereas Genin (2007: 269) date him to AD 15-70.

III.6 THE COARSE WARE

Vítor Silva Dias

We present here only the data considered relevant for publication, information recorded and archived in a database, according to the following order: inventory number; year; provenience; measurements (diameter exterior rim/base; diameter interior rim/base; height); fabric; fabric colour; morphological category; group; description; decoration; general chronology; references.

For the encoding of colours, we refer to the codification of Munsell 1994.

As most fragments present different characteristics, the catalogue includes different details and items where necessary. Dimensions are given in centimetres.

For fabric description, see chapter. V.4.

AMM1995B1019 (Fig. 139, g)
Year 1995. Provenience: s. 2537. Measurements: 32; 30.8; 4.6. Fabric: I; colour: 2.5YR 5/6; morphological category: I. Plate; group: table ware. Straight rim without inflection; open shape; roundish lip; similar to the Pompeian Red Ware shapes; slip applied. General chronology: Early Empire. References: Santos 2011: pl. I, n. 245, 1132.

AMM1995B801 (Fig. 139, a)
Year 1995. Provenience: s. 2537. Measurements: 35; 31.4; 2.4. Fabric: I; colour: 2.5YR 5/4; morphological category: I. Plate; group: table ware. Everted and horizontal rim; open shape; roundish lip. General chronology: Early Empire. References: Alarcão 1975, pl. XXVI, nº 533: 95; Sánchez Sánchez 1992: pl. 7: nº 29; Pinto 1999a: 242, 80.2134-2B; Sousa and Arruda 2010: pl. 24.

AMM1995B824 (Fig. 141, f)
Year 1995. Provenience: s. 2434. Measurements: 34; 31.8; 6.5. Fabric: H1; colour: 5YR 5/4; morphological category: II. Deep plate; group: table ware. Introvert rim; open shape; roundish lip; decoration: burnished decoration. General chronology: Early Empire; References: Alarcão 1974: 10, pl. V, 25; Diogo et al. 1987: 108, pl. XVIII; Nolen 1988a: pl. VIII, nº 55; Amaro *et. al.* 1996: 207, 214, nº 1; Réchin 1996: 465, nº 34; Pinto 1999a: 249, 81.1521-2D.

AMM2001B865 (Fig. 140, a)
Year 1995. Provenience: s. 2434. Measurements: 15; 13.4; 5.4. Fabric: B; colour: 5YR 6/4; morphological category: III. Bowl; group: table ware. Right rim without inflection; open shape; roundish lip. General chronology: Early Empire. References: Nolen 1985b: pl. XXXIII nº 304.

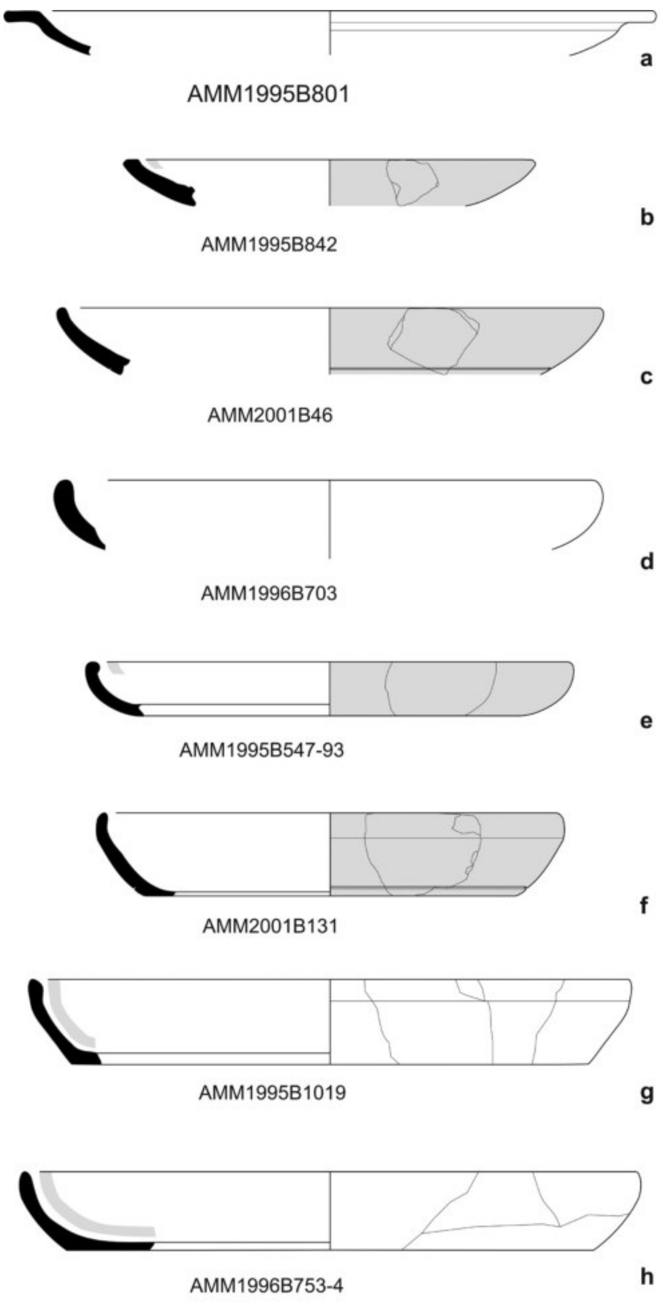

Fig. 139 *Ammaia*, Southern Gate. Plates.

AMM1995B741 (Fig. 140, b)
Year 1995. Provenience: Structure 2. Measurements: 17; 14; 3.8; Fabric: B; colour: 7.5YR 6/4; morphological category: III. Bowl; group: table ware. Everted rim and raised lip; open shape; roundish lip. General chronology: Early Empire; References: Nin 1996: 268, nº D; Rivet 1996: 335, nº 4; Pinto 1999a: 303, 80.1332-1B.

AMM1995B642 (Fig. 141, e)
Year 1995. Provenience: s. 253. Measurements: 26; 23.8; 5.2. Fabric: H1; colour: 2.5Y 5/1; morphological category: II. Deep plate; group: table ware. Introverted rim; open shape; roundish lip. References: Alarcão 1974: 10, pl. V, 25; Diogo 1987: 108, pl. XVIII; Nolen 1988a: pl. VIII, nº 55; Amaro *et. al*. 1996: 207, 214, nº1; Réchin 1996: 465, nº 34; Pinto 1999a: 249-252 (nº 81.1521-2D).

AMM1996B1006 (Fig. 141, d)
Year 1996. Provenience: s. 2538. Measurements: 30; 26.9; 4.2. Fabric: H1; color: 2.5Y 5/2; morphological category: II. Deep plate; group: table ware. Right rim without inflection; open shape; right lip. General chronology: Early Empire. References: Neves 1972: pl. III, nº 5; Caeiro 1978: 253, 256, pl. 10; Nolen and Dias 1981: 93 (shape 2 Santo André, Montargil), p. 128, pl. XXXV nº E 5.4.; Pinto 1999a: 226.

AMM1996B703 (Fig. 139, d)
Year 1996. Provenience: s. 2635. Measurements: 29?; 26.5; 3.8. Fabric: C; colour: 7.5YR 8/3; morphological category: I. Plate; group: table ware. Introverted rim; open shape; roundish lip. General chronology: Early Empire. References: Arruda, Viegas and Bargão 2010: pl. 7, nº 1.

AMM1996B753-4 (Fig. 139, h)
Year 1996. Provenience: s. 2635. Measurements: 33; 31.9; 4.3. Fabric: I; colour: 2.5YR 5/6; morphological category: I. Plate; group: table ware. Plan bottom; discoid; body shaped as inverted truncated cone; similar to the Pompeian Red Ware shapes; slip applied. General chronology: Early Empire. References: Sánchez Sánchez 1992: pl. 7: nº 31.

AMM2001-2B234-6-9 (Fig. 141, a)
Year 2001. Provenience: s. 2734. Measurements: 24; 22.7; 2.8. Fabric: C; colour: 10YR 7/3; morphological category: II. Deep plate; group: table ware. Right rim without inflection; open shape; roundish lip. General chronology: Early Empire; References: Aguarod Otal 1991: 316, nº 1.

AMM2001B131 (Fig. 139, f)
Year 2001. Provenience: s. 2735. Measurements: 25; 24.4; 4.5. Fabric: A; colour: 10R 6/6; morphological category: I. Plate; group: table ware. Right rim without inflection; open shape; roundish lip; slip applied on the inner surface and on the rim; incised decoration; imitation of the plate Pompeian Red Ware, shape 6 Luni 5. General chronology: Early Empire. References: Neves 1972: pl. III: nº 7-11; Sánchez Sánchez 1992: pl.7: nº 31; Dias 2002: 130, nº 186; Santos 2011: pl. I, n. 245, 1122.

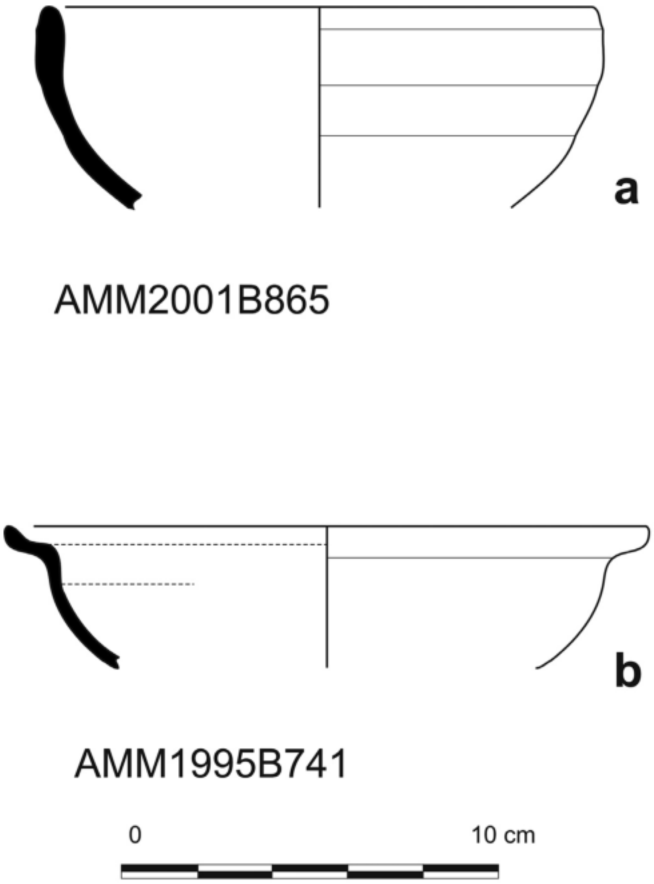

Fig. 140 *Ammaia*, Southern Gate. Bowls.

AMM1995B842 (Fig. 139, b)
Year 2001. Provenience: s. 2734. Measurements: 22, 20.5, 2.7. Fabric: H1; colour: GLEY 1 5/10Y; morphological category: I. Plate; group: table ware. Decoration: roulette decoration very typical in the necropolis of Alentejo. General chronology: 1st half first – 1st half second century AD. References: Viana 1956: 15; Alarcão and Alarcão 1966: 15/31 p. 15.

AMM2001B46 (Fig. 139, c)
Year 2001. Provenience: s. 2734. Measurements: 29; 28; 3.6. Fabric: A; colour: 10R 6/6; smoother decoration; morphological category: I. Plate; group: table ware. Right rim without inflection; open shape; roundish lip. General chronology: Early Empire.

AMM2001B381 (Fig. 142, d)
Year 2001. Provenience: s. 2734. Measurements: 38; 33.3; 3.6. Fabric: D; colour: 10YR 8/4; morphological category: IV.

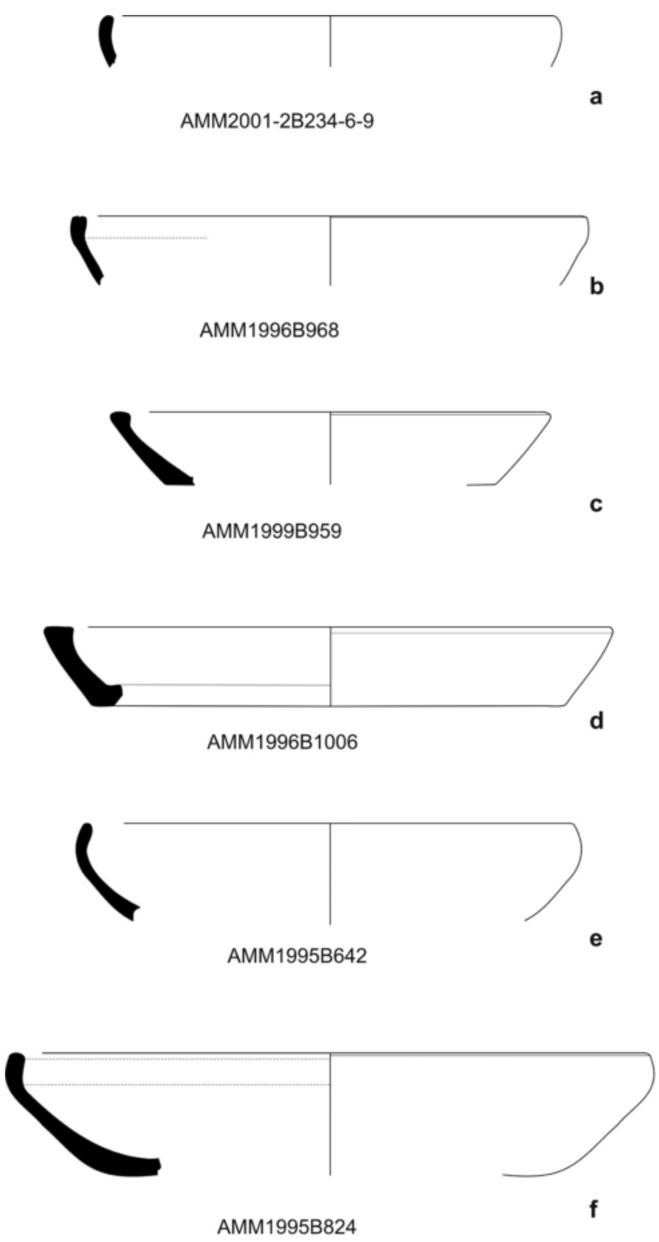

Fig. 141 *Ammaia*, Southern Gate. Deep plates.

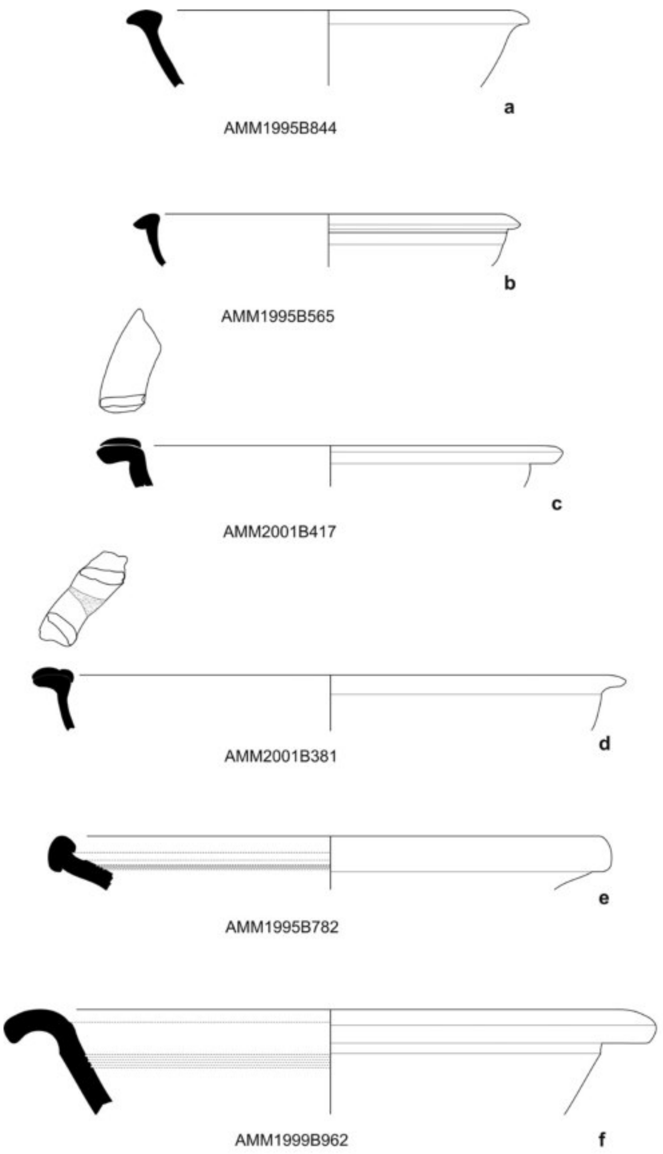

Fig. 142 *Ammaia*, Southern Gate. Mortars.

Mortar; group: kitchen ware. Everted and horizontal rim; open shape; roundish lip.

AMM2001B417 (Fig. 142, c)
Year 2001. Provenience: s. 2733. Measurements: 30; 24; 2.6. Fabric: E; colour: 2.5YR 5/4; morphological category: IV. Mortar; group: kitchen ware. Everted and horizontal rim; open shape; roundish lip.

AMM1999B962 (Fig. 142, f)
Year: 1999. Provenience: s. 2735. Measurements: 42; 33; 6.8. Fabric: D; colour: 5YR 7/6; morphological category: IV. Mortar; group: kitchen ware. Extrovert rim; everted rim with inflection; roundish lip; decoration: sooting marks on exterior surface. References: Aguarod Otal 1991: 224, nº 4, (Shape 2; Dramont D2).

AMM1995B782 (Fig. 142, e)
Year: 1995. Provenience: Structure 2. Measurements: 36; 33; 3.5; Fabric: J; colour: WHITE 10YR_/2 9; morphological category: IV. Mortar; group: kitchen ware. Introvert rim; open shape; roundish lip. References: Vegas 1973: 31, 34; Alarcão *et al.* 1976: 72, 73, 136; Nolen 1994: pl. 26, p. 149; Pinto 1999a: 83. 232-9; Pinto 2003: 171 nº 1.

AMM1995B425 (Fig. 143, c)
Year: 1995. Provenience: s. 2134. Measurements: 29; 24.3; 5.5. Fabric: H1; 2.5Y 3/1; morphological category: V. Earth-

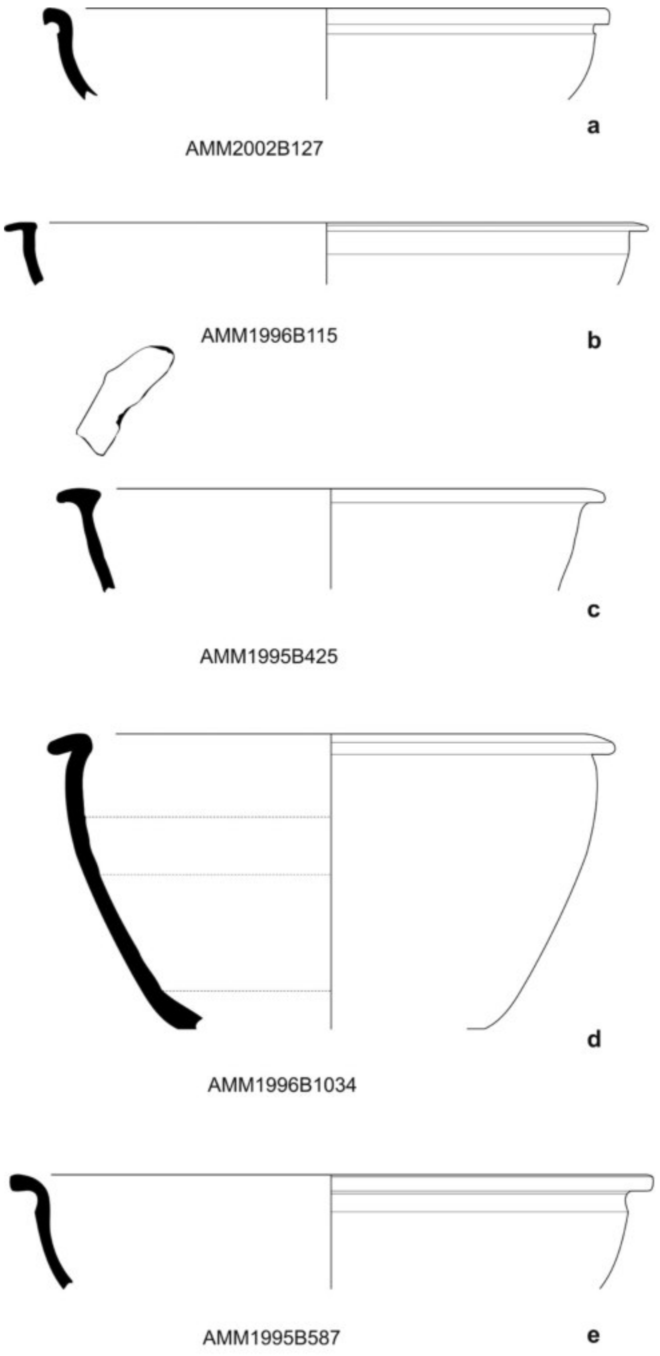

Fig. 143 *Ammaia*, Southern Gate. Bowls.

enware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; almondy lip.

AMM1996B815 (Fig. 144, b)
Year: 1996. Provenience: s. 2434. Measurements: 36; 30.7; 2.4. Fabric: H1; colour: 5Y 4/1; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; roundish lip.

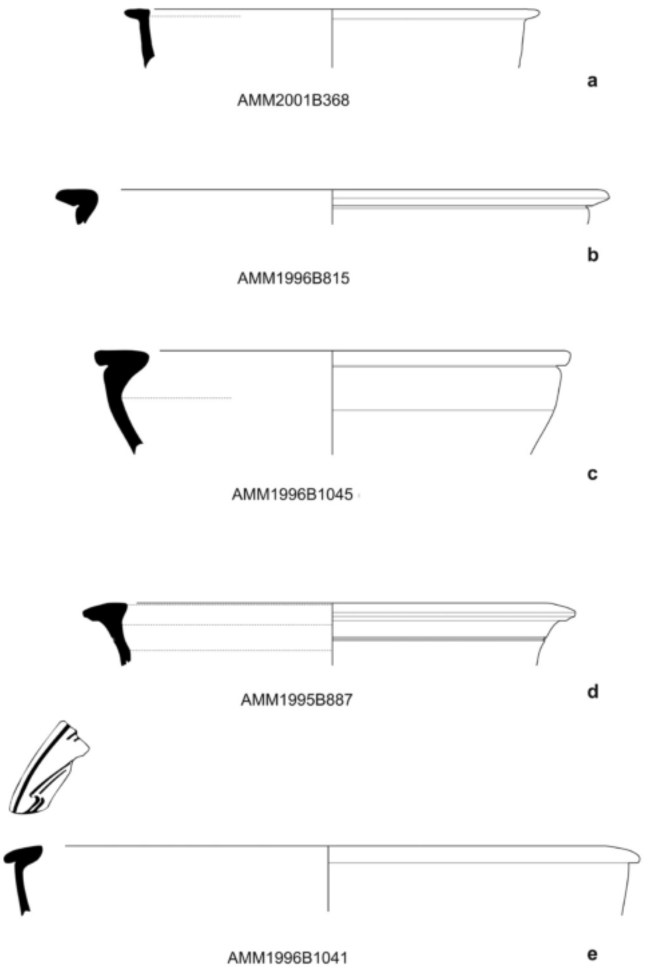

Fig. 144 *Ammaia*, Southern Gate. Bowls.

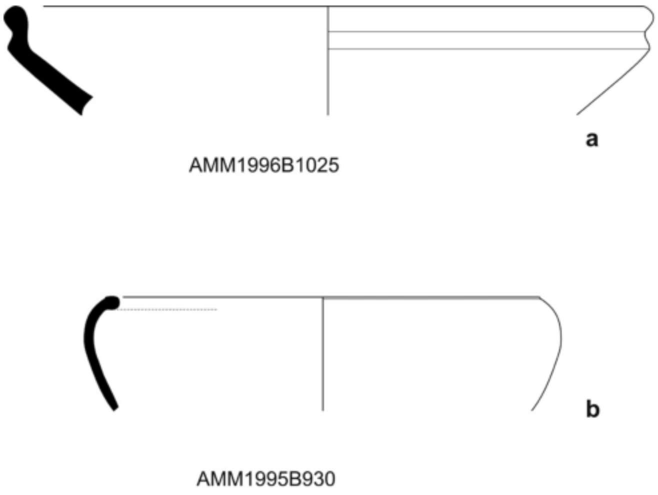

Fig 145 *Ammaia*, Southern Gate. Terrines.

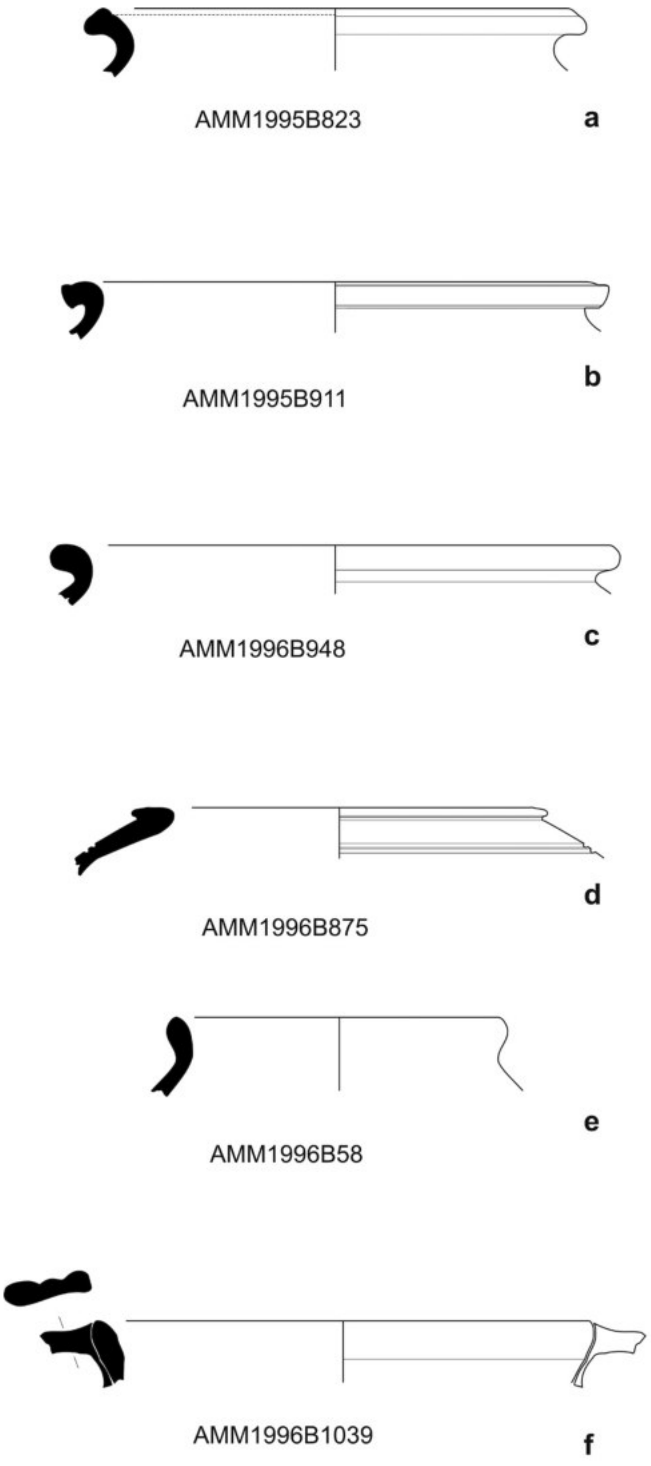

Fig. 146 *Ammaia*, Southern Gate. Pots and pans.

AMM1995B587 (Fig. 143, e)
Year: 1995. Provenience: Structure 2. Measurements: 34; 30; 6.1. Fabric: H1; colour: 5Y 5/1; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; right lip. References: Sousa and Arruda 2010: pl. 23.

AMM1995B887 (Fig. 144, d)
Year: 1995. Provenience: Structure 2. Measurements: 32; 26.3; 4.1. Fabric: E; colour: 2.5YR 6/8; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Everted rim; everted rim with inflection; tapered lip.

AMM1995B823 (Fig. 146, a)
Year: 1995. Provenience: s. 2434. Measurements: 22; 17.8; 3. Fabric: H1; colour: 2.5Y 4/1; morphological category: IX. Pot/Pan; group: cooking ware? Extrovert rim; closed shape; triangular lip; decoration: incised. References: Sousa and Arruda 2010: pl. 28; Pinto and Schmitt 2010: 374, nº 159.

AMM1995B911 (Fig. 146, b)
Year: 1995. Provenience: Structure 2. Measurements: 24; 20.3; 2.5; Fabric: G; colour: 7.5YR 6/6; morphological category: IX. Pot/Pan; group: cooking ware? Everted rim; closed shape; roundish lip.

AMM1995B844 (Fig. 142, a)
Year: 1995. Provenience: Structure 2. Measurements: 26; 21.3; 5. fabric: O; colour: 7.5YR 6/4; morphological category: IV. Mortar; group: cooking ware. Introverted rim with inflection; closed shape; roundish lip.

AMM1995B930 (Fig. 145, b)
Year: 1995. B; Provenience: s. 2537. Measurements: 24.5; 21.3; 6. Fabric: B; colour: 7.5YR 7/3; morphological category: VI. Terrine; group: table ware. Introverted and horizontal rim; closed shape; roundish lip; General chronology: Early Empire. References: Neves 1972: pl. VII nº 42.

AMM1995B565 (Fig. 142, b)
Year: 1995. Provenience: s. 2636; Measurements: 24.5; 21.4; 3.5. Fabric: B; colour: 7.5YR 8/3; morphological category: IV. Mortar; group: cooking ware. Everted rim; open shape; tapered lip.

AMM1995B894 (Fig. 147, c)
Year: 1995. Provenience: Structure 2. Measurements: 16; 13; 4.5. Fabric: F; colour: 5YR 6/6; morphological category: IX. Pot/Pan. description: everted and horizontal rim; closed shape; bevelled lip; everted rim with traces of sooting. References: Alarcão 1975: pl. V, nº 81; Sánchez Sánchez 1992: pl. 9, nº 1.

AMM1995B426 (Fig. 147, a)
Year: 1995. Provenience: s. 2134. Measurements: 13; 10.2; 6.2. Fabric: E; colour: 5YR 8/3; morphological category: VIII. Pan; group: cooking ware. Everted rim; closed shape; roundish lip.

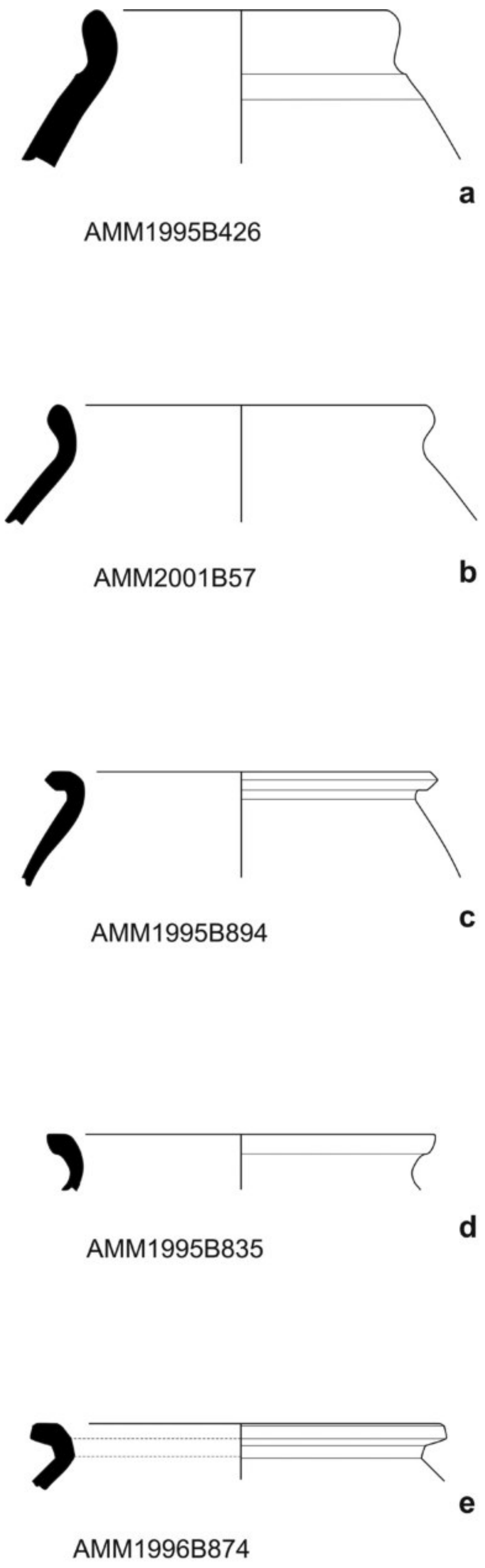

Fig. 147 *Ammaia*, Southern Gate. Pot/pan.

AMM1995B835 (Fig. 147, d)
year: 1995. Provenience: s. 2434. Measurements: 16; 13.2; 2.3. Fabric: E; colour: 2.5YR 6/8; morphological category: IX. Pot/Pan; group: cooking ware? Everted and horizontal rim; closed shape; bevelled lip; rim with burning marks.

AMM1996B874 (Fig. 147, e)
Year: 1996. Provenience: s. 2736. Measurements: 17; 13.6; 2.4. Fabric: G; colour: 5YR 5/4; slip; morphological category: IX. Pot/Pan; group: cooking ware. Everted and horizontal rim; closed shape; right lip; decoration: slip on the exterior surface: 10YR 8/5. References: Alarcão 1975: pl. VI, nº 91, 91 A (similar); Nolen 1988: pl. X, nº 74.

AMM1996B871 (Fig. 148, c)
Year: 1996. Provenience: s. 2736. Measurements: 22; 18; 6; Fabric: D; colour: 10YR 7/4; morphological category: VII. Saucepan; group: kitchen ware. Everted and horizontal rim; closed shape; straight lip; high wear on rim indicating use of a lid. References: Neves 1972: pl. VI, nº 39 (similar shape with rim slightly different); Pinto 1999a: 402, 81.1538-2E; Dias 2002: 138, nº 181.

AMM1996B1041 (Fig. 144, e)
Year: 1996. Provenience: s. 2538. Measurements: 41; 36; 4.5. Fabric: H1; colour: 7.5YR 5/2; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Introverted and everted rim with folded over shoulder; open shape; roundish lip; lip with incised decoration; decoration: incised design. References: Pinto 1999a: 337, 83. 1131-1B; Dias 2002: 135, nº 196.

AMM1996B547-93 (Fig. 139, e)
Year: 1996. Provenience: s. 2736. Measurements: 16; 13.2; 2.5. Fabric: F; colour: 10YR 7/2; morphological category: I. Plate; group: table ware. Everted and horizontal rim; closed shape; roundish lip. General chronology: Early Empire.

AMM1996B984 (Fig. 148, a)
Year: 1996. Provenience: s. 2736. Measurements: 31; 25; 4.6. Fabric: H1; colour: 5Y 6/1; morphological category: VII. Saucepan; group: kitchen ware. Introverted and everted rim with folded over shoulder; closed shape; right lip.

AMM1996B875 (Fig. 146, d)
Year: 1996. Provenience: s. 2736. Measurements: 18; 14.7; 3.3. Fabric: E; colour: 5YR 6/8; morphological category: X. Pot; group: cooking ware? Everted rim; everted rim with inflection; roundish lip.

AMM1996B115 (Fig. 143, b)
Year: 1996. Provenience: s. 2735. Measurements: 34; 30.8; 3.3. Fabric: C; colour: 7.5YR 7/3; morphological category:

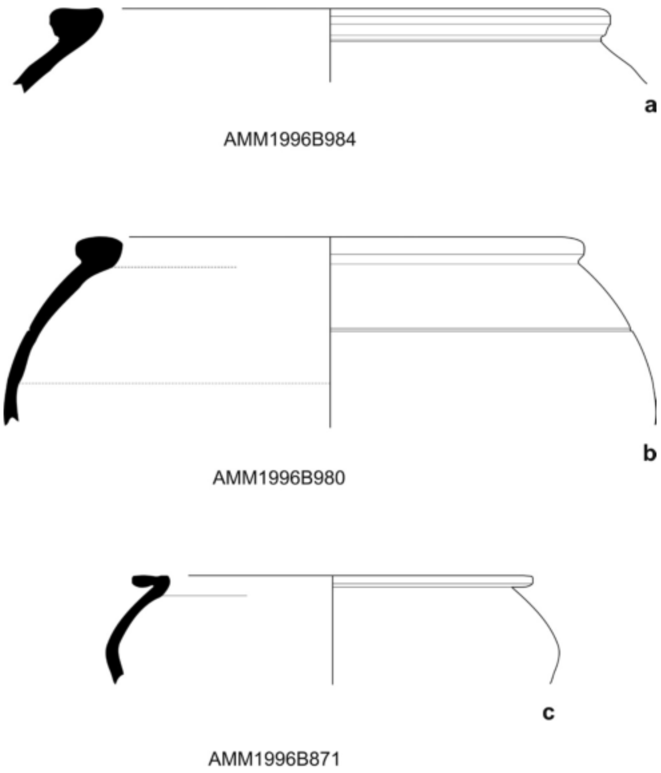

Fig. 148 *Ammaia*, Southern Gate. Saucepans.

V.A. Earthenware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; roundish lip.

AMM1996B1025 (Fig. 145, a)
Year: 1996. Provenience: s. 2538. Measurements: 34; 31.6; 5.8. Fabric: H1; colour: 10YR 5/2; morphological category: VI. Terrine; group: table ware. Right rim without inflection; open shape; roundish lip. References: Pinto 1999a: 359, nº 82.2472-2F (Terrine II - IV); Dias 2002: 135, nº 339.

AMM1996B1034 (Fig. 143, d)
Year: 1996. Provenience: s. 2736. Measurements: 30; 25.8; 15.8. Fabric: H1; colour: 7.5YR 4/1; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; roundish lip. References: Silva, Soares and Coelho-Soares 1992: pl. 6, nº 1; Pinto 1999a: 335, 82. 1700-2A; Almeida and Carvalho 2005: 333, 355, nº 18 (fourth-fifth century AD).

AMM1996B1045 (Fig. 144, c)
Year: 1996. Provenience: s. 2736. Measurements: 31; 24; 7. Fabric: H1; colour: 10YR 5/2; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Introverted and horizontal rim; closed shape; roundish lip. References: Alarcão 1975: pl. XXI, p. 84, nº 419; Pinto 1999a: 339; Monteiro 2011: pl. 19, nº 62, p. 83, 122.

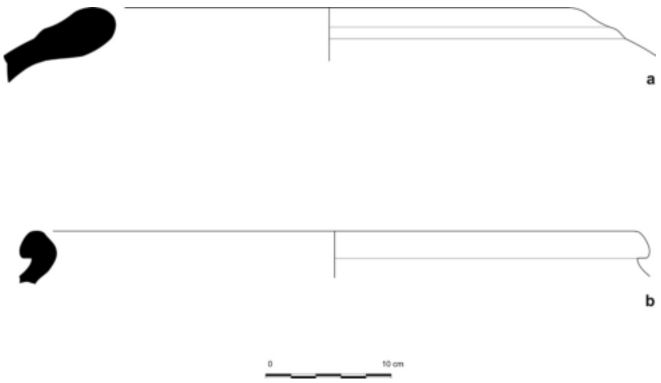

Fig. 149 *Ammaia*, Southern Gate. *Dolia*.

AMM1996B948 (Fig. 146, c)
Year: 1996. Provenience: s. 2733. Measurements: 25; 21.3; 2.6. Fabric: M; colour: 2.5YR 4/1; morphological category: IX. Pot/Pan; group: cooking ware? Everted rim; introverted rim without inflection; roundish lip.

AMM1996B968 (Fig. 141, b)
Year: 1996. B; Provenience: s. 2735. Measurements: 27; 25.5; 3.7. Fabric: B; colour: 7.5YR 7/6; morphological category: II. Deep plate; group: table ware. Right rim without inflection; open shape; bifurcated lip; decoration: fluting. References: Neves 1972: 16, 17, pl. III 4, 5; Nolen and Dias 1981: 65, 128, 165, pl. LIII nº G4.1(2); Aguarod Otal 1991: 204; Pinto 1999a: 209.

AMM1996B28 (Fig. 149, b)
Year: 1996. Provenience: s. 2433. Measurements: 50; 44.5; 4.3. Fabric: E; colour: 2.5YR 6/8; morphological category: XVIII. *Dolium*; group: storage ware. Everted and horizontal rim; open shape; lip semicircular;

AMM1996B980 (Fig. 148, b)
Year: 1996. Provenience: s. 2736. Measurements: 28; 22.9; 10.5. Fabric: H1; 10YR 5/2; morphological category: VII. Saucepan; group: kitchen ware. Introverted rim with horizontal lip folded over shoulder; closed shape; bevelled lip.

AMM1999B959 (Fig. 141, c)
Year: 1999. Provenience: s. 2735. Measurements: 23; 21; 3.8. Fabric: H1; 7.5YR 3/1; morphological category: II. Deep plate; group: cooking ware; Right rim without inflection; open shape; sooting marks. References: Alarcão 1975: pl. IX nº 169; pl. VII, nº 103; pl. XXX nº 638; Nolen 1985b: 84, 19, pl. XXIX; pl. XXVIII nº 216, 218, 219; pl. XXIX 241, 239; Coelho-Soares 1987: 197-200; Mayet and Silva 1998: 198, 221, 260; Pinto 1999a: 252-256: 82.3157-2A p. 254.

AMM2001B368 (Fig. 144, a)
Year: 2001. Provenience: s. 2733. Measurements: 27; 23.9; 4. Fabric: C; colour: 7.5YR 7/3; morphological category: V. Earthenware bowl; group: kitchen/storage ware? Everted and horizontal rim; open shape; bevelled lip. References: Pinto and Schmitt 2010: 356; nº 26; p. 263-265 Fr8.

AMM1996B58 (Fig. 146, e)
Year: 2001. Provenience: s. 2633. Measurements: 15; 13; 3.2. Fabric: F; colour: 7.5YR 5/4; decoration: smoothed; morphological category: VIII. Pan; group: cooking ware? Everted rim; closed shape; roundish lip; rim and exterior wall with slight traces of sooting.

AMM2001B57 (Fig. 147, b)
Year: 2001. Provenience: s. 2633. Measurements: 16; 13.5; 5.4. Fabric: F; colour: 7.5YR 5/4; morphological category: VIII. Pan; group: cooking ware? Everted rim; closed shape; roundish lip; rim with slightly traces of sooting; decoration: smoothed. References: Dias 2002: 138, nº 348; Sousa and Arruda 2010: pl. 24 (pots and pans).

AMM1996B1039 (Fig. 146, f)
Year: 2001. Provenience: s. 2735. Measurements: 20; 19.2; 2.7. Fabric: G; colour: 7.5YR 6/6; morphological category: VIII. Pan; group: cooking ware? Everted rim; open shape; almondy lip; decoration: slip.

AMM2002B127 (Fig. 143, a)
Year: 2002. Provenience: s. 2734. Measurements: 30; 27; 5. Fabric: H2; colour: GLEY 1 6/10Y; morphological category: V. *Dolium*; group: kitchen/storage ware? Everted rim and raised lip; open shape; triangular lip; References: Sousa and Arruda 2010: pl. 23.

AMM2002B302 (Fig. 149, a)
Year: 2002. Provenience: s. 2734. Measurements: 46; 34; 6. Fabric: L; colour: 2.5YR 5/6; morphological category: XVIII. *Dolium*; group: storage ware. Introverted rim; closed shape; roundish lip; storage ware; decoration: incised. References: Santos 2011: pl. XXXVI, no. 65, 2.8.1.1.

III.7 THE AMPHORAE

Caterina P. Venditti

The data are presented here according to the following order: inventory number, object, provenience, dimensions, description, production, contents, fabric colour, fabric description, date-range, references.

The inventory number is composed on the basis of the: location (AMM), year (0000), sector (B), square (0000), internal progressive number. For the encoding of colours, we refer to Munsell 1994. Dimensions are given in centimetres.

Excavations 1995

AMM1995B2237.2 Base (Fig. 150)
Provenience: s. 2237. Max height 7.8; thickness wall 0.7; thickness base 1. Long hollow frustoconical base. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 5YR7/12; ext. surf. 5YR7/10-12, 5YR6/10-12 (cream/orange). Visual characteristics: very hard, harsh coarse fabric. Abundant ill-sorted and variable size inclusions: white subangular grains (limestone), black, grey inclusions and sparse brown grains. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2534.3 Handle (Figs. 151, 152)
Provenience: s. 2535. Thickness 2.6. Part of the long vertical handle, bifid section. Classification: Dressel 2-4. Production: Campania, central Italy. Contents: wine. Fabric colour: core 5YR6/8; ext. surf. 10YR8/6 (cream). Visual characteristics: Campanian black sand fabric. Very hard, harsh fabric with very abundant ill-sorted and variable size black sand inclusions; dark and red-brown rocks are abundant; dark-orange, brown inclusions, limestone. Sparse gold mica. The break is hackly with harsh surfaces. Date range: 70 BC - early third century AD. References: Zevi 1966; Hesnard 1977; Hesnard and Lemoine 1981; Arthur 1983; Peacock and Williams 1986: 105-106; Tchernia 1986; Panella 2001; Williams, Panella and Keay 2005.

AMM1995B2434.4 Rim
Provenience: s. 2434. Diameter unspecified; wall thickness *c.* 0.9; rim height 1.8. Everted triangular rim, rounded profile, slightly sloping inward; internal profile with a concave end in correspondence of the lip. Classification: Beltran IIA (variant B?). Production: *Baetica* coast. Contents: fish products. Fabric colour: core 10R6/16; ext. surf. 7.5YR7/1.0 (cream). Visual characteristics: Cádiz fabric (?). Hard, rough fabric, with abundant ill-sorted and variable size white (limestone), red-brown inclusions, brown grain in the core, limestone. The clay contains fine sparse silver and even less gold mica. Date range: 10-15 AD – (mid) second century AD. References: Beltrán Lloris 1970: *passim*, 1977: *passim*; Peacock and Williams 1986: 122-123; Lagostena Barrios 2005a; Garcia Vargas and Bernal Casasola 2008: *passim*; García Vargas, Martín-Arroyo and Lagóstena Barrios 2012.

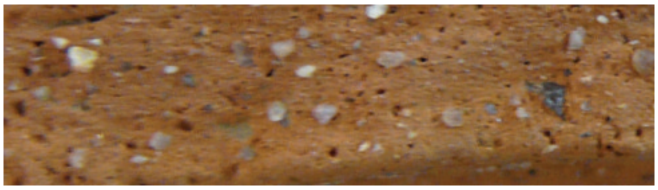
Fig. 150 No. inv. AMM1995B2237.2: the fabric.

AMM1995B2434.5 Base (Figs. 153, 154)
Provenience: s. 2434. Short and hollow spike. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 10R6/16; ext. surf. 7.5YR5/8 (cream). Visual characteristics: very hard, harsh fabric with very abundant ill-sorted and variable size subrounded and subangular white, dark-red inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2437.6 Rim and wall (Fig. 155)
Provenience: s. 2437. Diameter 10.6; rim height 2.4; wall thickness 0.9. Thick rounded rim and part of wall. Classification: Dressel 14 (?). Production: Tejo/Sado valleys. Contents: fish-based products (?). Fabric colour: core 10R5/14 (orange); ext. surf. partially preserved white engobe (2.5Y9/2) 7.5YR6/8. Visual characteristics: hard, rough fabric with sparse well-assorted and variable size subrounded black, brown and white inclusions. Date range: Claudian period - early third century AD (?). References:

Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Mayet 1990: *passim;* Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Bernal Casasola 2000: 278-279; Fabião 1997: *passim*, 2004: *passim*, 2008: *passim*; Raposo and Viegas 2013.

AMM1995B2537.7 Handle
Provenience: s. 2537. Thickness 2.9.
Long vertical handle, elliptical in section with a shallow groove down the centre. Classification: Dressel 14 (?).
Production: local production. Contents: fish-based products (?). Fabric colour: core brown; ext. surf. 10R4/10-10R3/10 (red/brown). Visual characteristics: hard, rough fabric with abundant well-assorted and variable size black, brown and white inclusions. Date range: Claudian period - early third century AD (?). References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Meyet 1990: *passim*, Fabião 1997: *passim*, 2004: *passim*, 2008: *passim*, Fabião and Carvalho 1990: *passim*, Mayet 1990: 29-31; Bernal Casasola 2000: 278-279; Raposo and Viegas 2013.

AMM1995B2534.8 Handle (Figs. 156, 157)
Provenience: s. 2534. Thickness 1.2.
Long vertical handle, with a single narrow irregular profile groove in the centre. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5Y8/6; ext. surf. 2.5Y8/6 (cream). Visual characteristics: hard, rough fabric with abundant well-assorted and variable size sub-rounded black, brown and white inclusions and grains of quartz. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; *passim*; Fabiao 1997: *passim*, 2004: *passim*, 2008: *passim*, Fabiao and Carvalho 1990: *passim*; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2435.9 Handle
Provenience: s. 2435. Thickness 1.7. Grooved curved handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 10Y7/2 (pale grey); ext. surf. 10YR7/8. Visual characteristics: very hard, rough fabric with very abundant ill-sorted and variable size sub-rounded black, brown and white inclusions and grains of quartz. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.10 Base (Fig. 158)
Provenience: s. 2535. Height 5.6; wall thickness 1.
Short hollow base. Classification: Almagro 51 c.

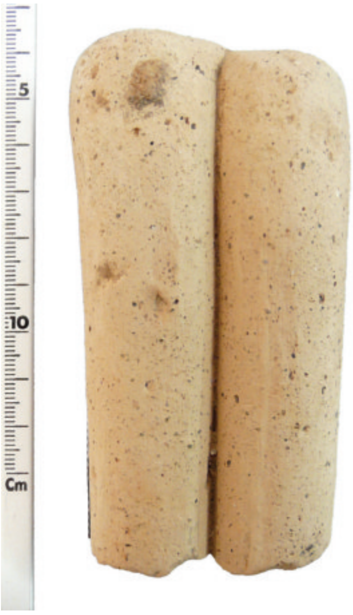

Fig. 151 Part of the long vertical handle, bifid section of Dressel 2-4 (no. inv. AMM1995B2534.3).

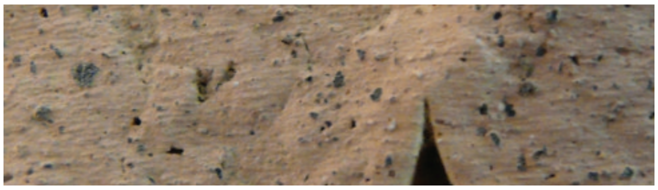

Fig. 152 No. inv. AMM1995B2534.3: the fabric.

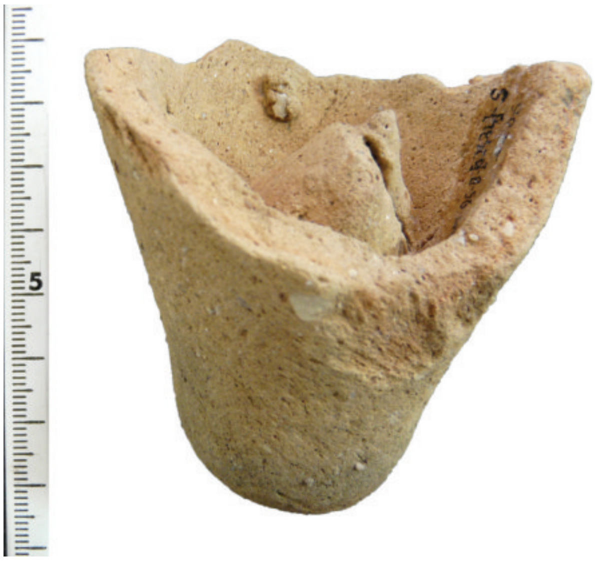

Fig. 153 Short and hollow spike of Almagro 51 c (no. inv. AMM1995B2434.5).

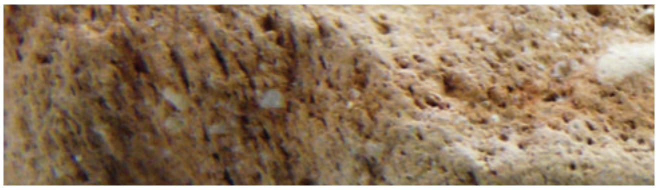

Fig. 154 No. inv. AMM1995B2434.5: the fabric.

Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 7.5YR7/8 (pink/orange); ext. surf. 10Y8/8 (yellow/creamy). Visual characteristics: hard, rough fabric with very abundant ill-sorted and variable size sub-rounded black, brown, red and white inclusions and limestone. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.11 Handle and attack of handle (Fig. 159)
Provenience: s. 2535. Thickness max handle 2.2; wall thickness 0.7. Handle and attack of ovoid handle. Production: Tejo/Sado valleys (?). Fabric colour: core 5Y6/2 (grey); ext. surf. 2.5Y8/4 (white engobe); 5YR4/8 (dark orange). Visual characteristics: soft, smooth fabric with sparse frequency of ill-sorted and variable size inclusions: on the external surface white inclusions (limestone?), red-brown variable size inclusions, mica. Cracks are also present on the external surface.

AMM1995B2537.12 Rim
Provenience: s. 2537. Diameter 10.6; height 3; max rim thickness 1.9. Rounded triangular-shaped rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 10R4/12, 2.5YR4/10; ext. surf. 10R4/12, 2.5YR4/10. Visual characteristics: hard, rough fabric with abundant ill-sorted and variable size sub-rounded black, brown, red and white inclusions, grains of quartz and limestone. Date range: third - (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2537.13 Handle
Provenience: s. 2537. Max thickness 1.8. Long ovoid-shaped handle and attack of handle. Production: Tejo/Sado valleys (?). Fabric colour: core 10YR3/2; ext. surf. 10YR6/10, 10YR5/8, 10YR6/8. Visual characteristics: hard, rough fabric with abundant frequency of ill-sorted and variable size inclusions: on the external surface white grains (limestone), few dark-red variable-size inclusions, mica, and quartz. In the grey core some cracks.

AMM1995B2637.14 Rim and part of wall
Provenience: s. 2637. Diameter 14.8; wall thickness 1.1. Short triangular-shaped rim, thickened at the top. Classification: Dressel 14. Production: Tejo/Sado valleys. Contents: fish-based products. Fabric colour: core 10R4/10; ext. surf. 5Y9/4 (engobe?). Visual characteristics: hard, rough fabric with abundant ill-sorted and variable size black, brown and white (limestone) inclusions, quartz. Orange core in the section, darker in the external surface. Date range: Claudian period - early third century AD (?). References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Mayet 1990: *passim*; Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim*, 2008: *passim*; Raposo and Viegas 2013.

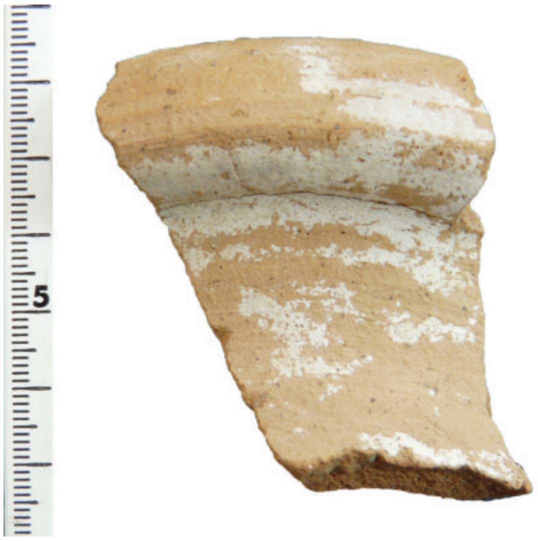

Fig. 155 Thick rounded rim and part of wall of Dressel 14 (?) (no. inv. AMM1995B2437.6).

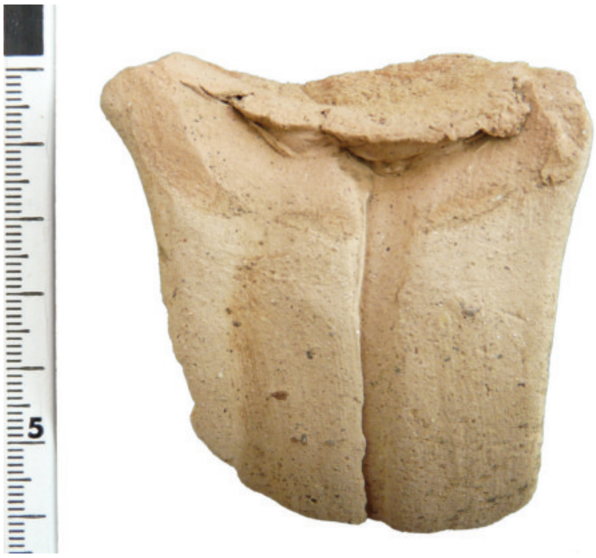

Fig. 156 Long vertical handle, with a single narrow irregular profile groove in the centre of Almagro 51 c (no. inv. AMM1995B2534.8).

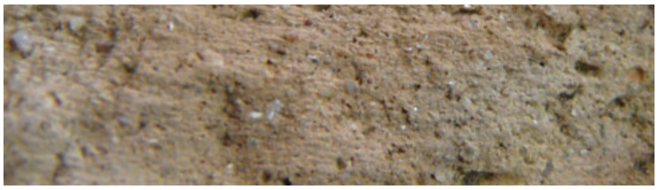

Fig. 157 No. inv. AMM1995B2534.8: the fabric.

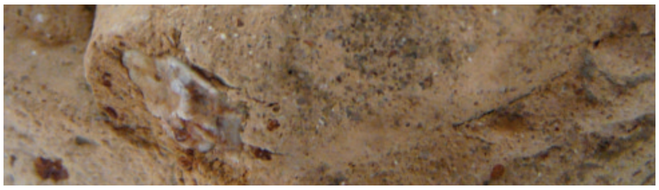

Fig. 158 No. inv. AMM1995B2535.10: the fabric.

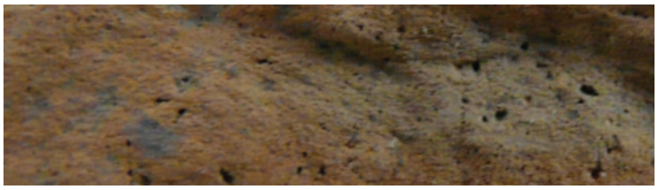

Fig. 159 No. inv. AMM1995B2535.11: the fabric.

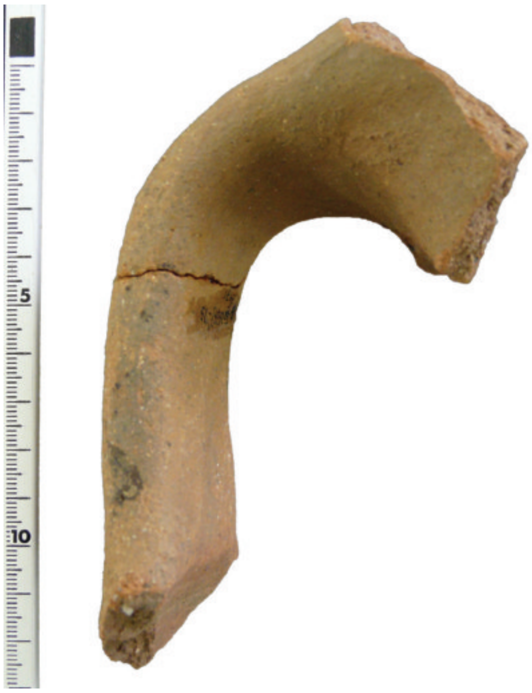

Fig. 160 Two fragments reassembled of thickish jutting rim and one rounded elliptical handle of Almagro 50 (no. inv. AMM1995B2637.16).

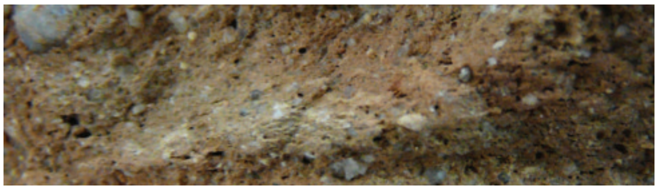

Fig. 161 No. inv. AMM1995B2637.16: the fabric.

AMM1995B2637.16 Rim and handle (Figs. 160, 161)
Provenience: s. 2637. Diameter int. rim 10.8; handle thickness 1.9-1.8; wall thickness 0.9. Thickish jutting rim with sub-triangular section and one rounded handle from rim to shoulder, elliptical in section. Two fragments reassembled. Classification: Almagro 50. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5YR4/8; ext. surf. 7.5YR7/4. Visual characteristics: hard, rough fabric with abundant ill-sorted and variable size light-grey, white, dark-red inclusions, grains of quartz and limestone. Date range: third - fifth century AD. References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1995B2237.17 Rim and handle
Provenience: s. 2237. Diameter 13.8; handle thickness 3 *c.* Everted rim and part of the ovoid-shaped thick handle. Classification: Keay XVI (variant A). Production: Tejo/Sado valley. Contents: fish products. Fabric colour: core 10YR4/2; ext. surf. 2.5YR5/12. Visual characteristics: hard, rough fabric with moderate frequency of ill-sorted and variable size sub-rounded black, white, brown inclusions, grains of quartz and limestone. Mica. Date range: third - (early) sixth century AD. References: Keay 1984: 149-155; Bernal Casasola 2000: esp. 281; Almeida and Raposo 2014b.

AMM1995B2337.18 Handle
Provenience: s. 2337. Thickness 2.1, width 3.8.
Ribbon-shaped handle, elliptic section. Two fragments reassembled. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 5Y8/8; ext. surf. 10R6/16. Visual characteristics: hard, rough fabric with abundant ill-sorted and variable size sub-rounded black, brown, light-grey, red, red-orange and white inclusions, grains of quartz and limestone. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2337.19 Handle
Provenience: s. 2337. Thickness 2.1 *c.*, width 3.9. Ovoid-shaped handle, with a groove in the lower part. Two fragments reassembled. Production: Tejo/Sado valleys. Fabric colour: core 7.5Y8/8; ext. surf. 2.5YR5/12. Visual characteristics: hard, rough fabric; abundant ill-sorted and variable size inclusions: on the external surface numerous red, white, brown, yellow, grey and black grains; in the core numerous small-size black, red and white grains.

AMM1995B2536.21 Rim and handle (Fig. 162)
Provenience: s. 2536. Diameter 10; max handle thickness 1.75 (min. 1.4). Everted rim, part of the handle, elliptical in section. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core

2.5GY2/2; ext. surf. 2.5Y7/8. Visual characteristics: hard, rough fabric; fracture with sharp margins; very abundant ill-sorted and variable size sub-rounded black, brown, light-grey, red and black inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.22 Handle
Provenience: s. 2535. Thickness 1.9-2, width 3.75-4.2-4.5; height 5.5. Handle with fracture at the attack. Production: Tejo/Sado valleys. Fabric colour: core 5Y8/6 (yellow/creamy); ext. surf. 10YR6/8, 10YR7/10. Visual characteristics: hard, rough fabric; abundant ill-sorted and variable size inclusions: on the external surface and in the core numerous small-size white, medium-size limestone and grey grains; numerous small-size black and red grains.

AMM1995B2438.23 Handle
Provenience: s. 2438. Thickness 2.1, width 3.8. Elliptic-shaped handle with a groove in the lower part. Two fragments reassembled. Production: Tejo/Sado valleys. Fabric colour: core 2.5Y8/2 (pale grey); ext. surf. 10YR7/8. Visual characteristics: soft, rough fabric; moderate frequency of ill-sorted and variable size inclusions: on the surface and in the core numerous variable size red, brown grains; rare frequency of small-size rounded white inclusions of limestone; quartz.

AMM1995B2438.24 Attack of handle
Provenience: s. 2438. Thickness 2.3, width 3.6. Attack of the handle. Classification: Almagro 50 (?). Production: Tejo/Sado valleys. Contents: fish products (?). Fabric colour: core 2.5Y7/8; ext. surf. 5Y7/8. Visual characteristics: hard, harsh fabric with abundant ill-sorted and variable size inclusions. Black, dark-red and white (limestone) inclusions and perhaps quartz grains above the external surface; one large iron grain. Date range: third – fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1995B2537.25 Rim and handle (Figs. 163, 164)
Provenience: s. 2537. Diameter 12.4; handle thickness 1.7, width 4.3. Everted rim, joined to the handle, elliptical in section. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 10YR5/6; ext. surf. 2.5YR5/10 2.5YR5/12. Visual characteristics: hard, rough fabric, coarse texture, with abundant ill-sorted and variable size white, black and grey inclusions, limestone and quartz. Date range: third – fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

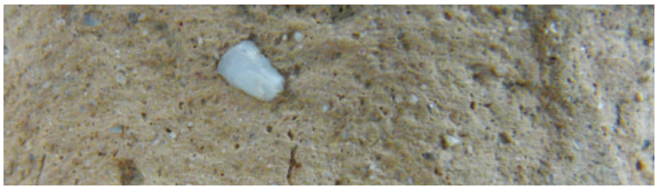
Fig. 162 No. inv. AMM1995B2536.21: the fabric.

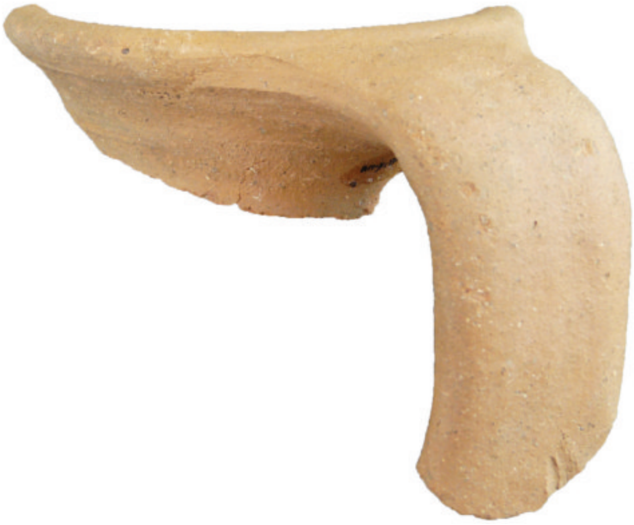
Fig. 163 Everted rim joined to the elliptical handle of Lusitana 9 (no. inv. AMM1995B2537.25).

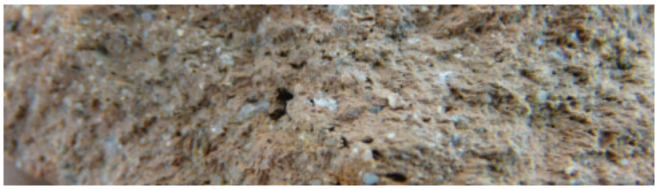
Fig. 164 No. inv. AMM1995B2537.25: the fabric

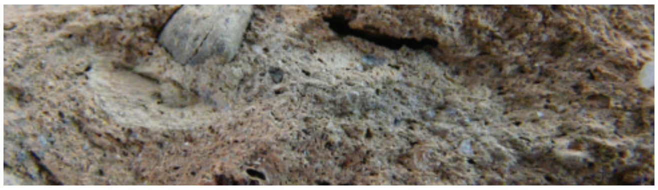
Fig. 165 No. inv. AMM1995B2537.26: the fabric.

AMM1995B2537.26 Rim and handle (Fig. 165)
Provenience: s. 2537. Diameter 8.8; handle thickness 1.9, width 4.5. Triangular-shaped rim joined to the ovoid section handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 10YR5/2; ext. surf. 10YR7/10. Visual charac-

teristics: hard, rough sandy with moderate frequency of ill-sorted and variable size inclusions: angular and subrounded red inclusions, limestone, black grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2537.27 Rim and handle (Fig. 166)
Provenience: s. 2537. Diameter 7.6; handle thickness 1.9, width 4.6. Triangular rim and vertical handle, with a single narrow groove in the centre. Three fragments reassembled. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 10YR5/6 pale reddish/brown; ext. surf. 10YR5/6. Visual characteristics: very hard, rough sandy with abundant ill-sorted and variable size inclusions: angular and subrounded red inclusions, limestone, black and grey grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2537.29 Rim and handle (Fig. 167)
Provenience: s. 2537. Diameter 8.8 *c.*; handle thickness 1.8, width 4.5. Triangular-shaped rim joined to the ovoid-shaped handle. Two fragments reassembled. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 5Y6/6 (handle); 2.5YR5/10; ext. surf. creamy. Visual characteristics: hard, rough sandy with moderate frequency of ill-sorted and variable size red black and grey inclusions; grains of quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.30 Handle
Provenience: s. 2535. Thickness 1.6, width 4.1. Handle with a groove. Production: Tejo/Sado valleys. Fabric colour: core 2.5Y2/2; ext. surf. 10R4/10. Visual characteristics: hard, rough sandy with abundant ill-sorted and variable size white, grey, red, dark-brown inclusions.

AMM1995B2434.31 Handle
Provenience: s. 2434. Thickness 1.8, width *c.* 3.4. Long handle with semi-elliptical section. Production: Tejo/Sado valleys. Fabric colour: core 5Y6/4; ext. surf. 2.5Y7/8. Visual characteristics: very hard, harsh fabric with abundant ill-sorted and variable size inclusions: numerous and large-size white, grey, red, grey inclusions; small-size white inclusions; small-size black and red inclusions.

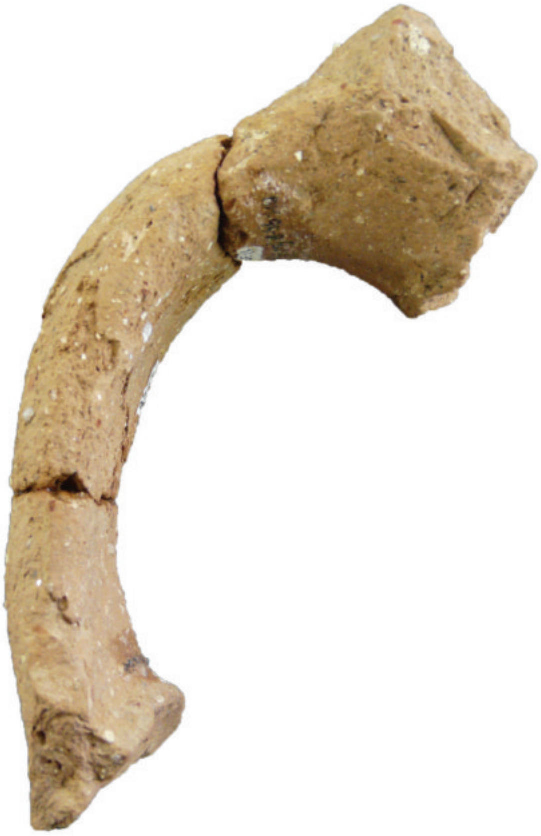
Fig. 166 Three fragments reassembled of triangular rim and vertical grooved handle of Almagro 51 c (no. inv. AMM1995B2537.27).

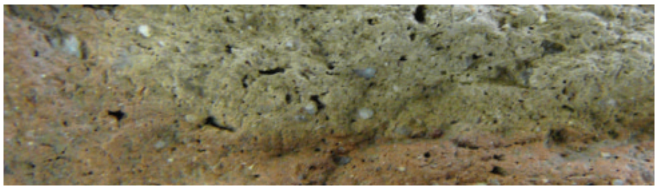
Fig. 167 No. inv. AMM1995B2537.29: the fabric.

AMM1995B2335.33 Handle
Provenience: s. 2335. Handle thickness 1.19, width *c.* 4. Attack of grooved handle. Production: local production (?). Fabric colour: core 5Y6/2 5Y6/4; ext. surf. 2.5YR5/8. Visual characteristics: very hard, harsh fabric with abundant ill-sorted and variable size inclusions: on the external surface large-size subrounded white inclusions; angular grey grains; rounded brown grains.

AMM1995B2233.34 Handle
Provenience: s. 2233. Thickness 1.7, width 3.7. Attack of the handle. Production: Guadalquivir valley (?). Fabric colour: core 2.5GY2/2; ext. surf. 5Y5/4. Visual characteris-

tics: very hard, harsh fabric with abundant ill-sorted and variable size inclusions: very abundant white, black and grey inclusions, quartz (?).

AMM1995B2233.35 Handle
Provenience: s. 2233. Thickness 1.7, width 4.3. Long handle, with elliptical section. Production: Guadalquivir valley (?). Fabric colour: core 10Y6/4; ext. surf. 7.5YR6/8 7.5YR6/10. Visual characteristics: hard, rough fabric, smoothed fracture, with abundant ill-sorted and variable size and variable rounding white, red, grey, brown inclusions.

AMM1995B2537.37 Handle
Provenience: s. 2537. Thickness 1.7, width 3.9. Grooved handle (and attack of handle). Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5Y2/2; ext. surf. 10R4/10. Visual characteristics: hard, rough sandy with abundant ill-sorted and variable size white, grey, red, dark-brown inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2433.40 Handle
Provenience: s. 2433. Thickness 1.8, width 4.9. Curved handle, with a single narrow groove in the centre. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5Y7/2 (pale grey); ext. surf. 2.5YR7/10. Visual characteristics: hard, rough sandy fabric, with abundant ill-sorted and variable size white, grey, black, red, dark-brown inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2334.41 Rim and handle
Provenience: s. 2334. Diameter unspecified; handle thickness 1.2, width 4.2. Thickish jutting rim with sub-triangular rounded section and part of the ovoid-shaped handle. Classification: Almagro 50. Production: Tejo/Sado valleys. Contents: fish products. Fabric colour: core 7.5YR6/8; ext. surf. 2.5YR6/14. Visual characteristics: hard, smooth fabric with very abundant well-assorted and variable size inclusions: abundant white subangular grains, small size grey grains, medium size and small rounded red grains, very small black inclusions. Date range: third – fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1995B2336.43 Base
Provenience: s. 2336. Thickness 1; wall thickness 0.95; height 4.7. Short hollow base. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5Y6/4; ext. surf. 5Y8/6 - 2.5YR6/12. Visual characteristics: hard, rough sandy fabric, with abundant ill-sorted and variable size white, grey, black, red, dark-brown inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.44 Rim
Provenience: s. 2535. Diameter 7.4; wall thickness *c.* 0.6. Triangular rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5Y6/4; ext. surf. 5Y7/2. Visual characteristics: hard, rough sandy fabric, with abundant ill-sorted and variable size white, grey, black, red, dark-brown inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2535.45 Rim and handle
Provenience: s. 2535. Thickness 1.2, width 3.1. Everted rim and part of the handle with a single narrow groove in the centre. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce products. Fabric colour: core 2.5YR5/12 (orange); ext. surf. 2.5YR6/12 2.5YR6/14. Visual characteristics: soft, smooth fabric, with moderate frequency of ill-sorted and variable size inclusions: in the core a large subrounded red grain; very abundant black inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B2434.46 Handle and attack of handle
Provenience: s. 2434. Thickness 1.7, width 3.4 *c.* Ribbon-shaped curved handle. Classification: LRA 3 (?). Production: Western Asia Minor (?). Contents: wine (?). Fabric colour: core 10R3/8; ext. surf. 10R3/8. Visual characteristics:

soft, smooth fabric, with moderate frequency of well-assorted and variable size white, black, grey inclusions, small on the external surface and larger in the core. Quartz. Date range: (late) fourth - (late) sixth century AD. References: Peacock and Williams 1986; Pieri 2005; Williams 2005b.

AMM1995B2433.47 Handle
Provenience: s. 2433. Thickness 1.8, width 4.2 *c.* Long handle, with one groove in the centre. Classification: Almagro 50. Production: local production (?). Contents: fish products. Fabric colour: core 2.5YR4/8; ext. surf. 10R4/10-10R4/12. Visual characteristics: hard, harsh fabric, irregular fracture, with very abundant well-assorted and large and medium size white, black, red, brown inclusions. Abundant mica. Date range: third – fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1995B2433.48 Rim and attack of handle
Provenience: s. 2433. Handle thickness 1.75; height 3.3. Very fragmentary thick jutting rim and attack of the handle. See no. inv. AMM1995B2433.47. Classification: Almagro 50. Production: local production (?). Contents: fish products. Fabric colour: core 2.5YR4/8; ext. surf. 2.5YR5/10. Visual characteristics: hard, rough fabric, irregular fracture, with very abundant well-assorted and large and medium-size white, black, red, brown inclusions. Abundant mica. Date range: third – fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1995B2433.49 Handle
Provenience: s. 2433. Thickness 1.7, width 1.5. Ribbon-shaped handle. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 2.5Y2/2; ext. surf. 7.5YR6/6 7.5YR6/8. Visual characteristics: hard, rough fabric, with abundant frequency of ill-sorted and variable size white and brown inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

Excavations 1996

AMM1996B2533.1 Handle
Provenience: s. 2533. Thickness 3.1, width 3.9. Long handle, with a single narrow groove in the centre. Production: Sado valley. Fabric colour: core 10YR4/2 10YR4/4; ext. surf. 10YR7/8 10YR7/10. Visual characteristics: hard, harsh fabric, irregular fracture; abundant frequency of ill-sorted and large-size white, dark-red, grey and black inclusions.

AMM1996B2634.2 Base (Fig. 168)
Provenience: s. 2634. Max height max 8.2; diameter 7 *c.*; wall thickness *c.* 1-1.3. Short hollow base. Rectangular-shaped hole on the bottom (reuse?). Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 10R5/14; ext. surf. 10R6/16. Visual characteristics: hard, harsh fabric, with abundant frequency of ill-sorted and large size white, black and grey inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2433.4 Rim and part of the neck (Fig. 169)
Provenience: s. 2433. Diameter 14.2; max height 8.1; wall thickness 1.3. A simple rounded lip (height 3.7), thickened rim distinct from the neck. Deep longitudinal grooves inside. Classification: Richborough 527. Production: Lipari island. Contents: *alum*. Fabric colour: core 10Y8/8; ext. surf. 10Y9/8. Visual characteristics: very hard fired, rough fabric, with harsh surfaces and a hackly fracture. Very abundant ill-sorted and variable size inclusions: large black, brown, grey and white grains. A thick, very rough fabric, greenish-grey and containing frequent large rounded rock fragments up to 5 mm across, many of which are colourless volcanic glass or grey, black and red scoriaceous lava. Date range: first century BC - second century AD. References: Pearce 1968; Peacock and Williams 1986: 111-112; Arthur 1989; Williams and Arthur 1991; Borgard 2005; Borgard and Cavalier 2003; Borgard and Capelli 2005; Williams 2005a.

AMM1996B2434.5 Rim and handle (Fig. 170)
Provenience: s. 2434. Diameter 8.6; thickness 1.3-2.1; max handle thickness 2.5. A simple rounded lip, just leaning on the outside and thickened; handle attached near the top of the neck, elliptical in section with a groove. Deep furrows within. Classification: Dressel 14. Production: Tejo/Sado valleys. Contents: fish-based products. Fabric colour: core 5YR5/8; ext. surf. 7.5YR5/8. Visual characteristics: hard, rough fabric, with abundant well-assorted and variable size white, red, black and brown inclusions. Date range: Claudian period - early third century AD. References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and

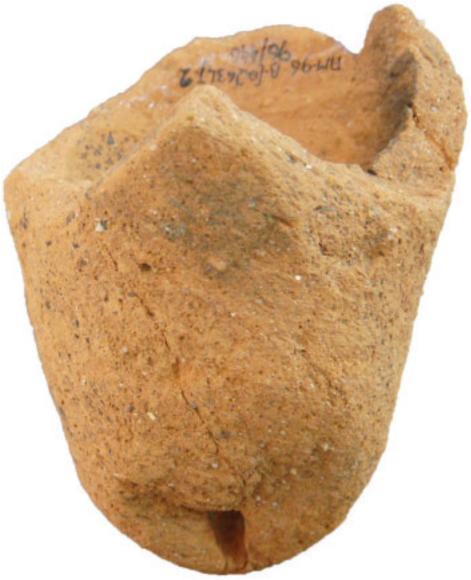

Fig. 168 Short hollow base of Almagro 51 c (no. inv. AMM1996B2634.2).

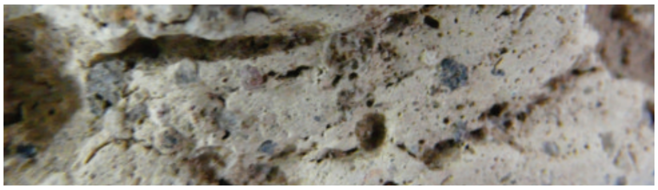

Fig. 169 No. inv. AMM1996B2433.4: the fabric.

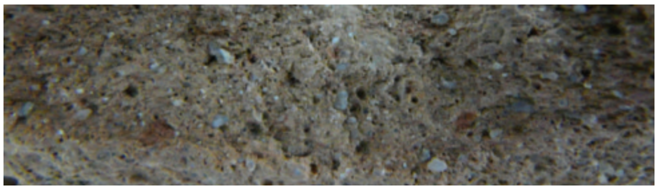

Fig. 170 No. inv. AMM1996B2434.5: the fabric.

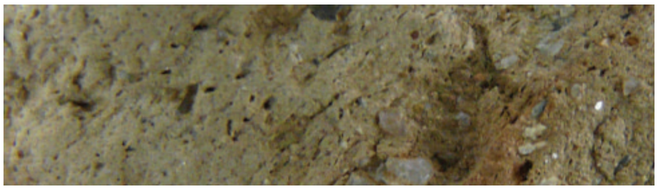

Fig. 171 No. inv. AMM1996B2635.9: the fabric.

Mayet 1990: *passim;* Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim,* 2008: *passim*; Raposo and Viegas 2013.

AMM1996B2733.6 Base
Provenience: s. 2733. Height max 4; diameter base *c.* 3.3. Solid truncated cone-shaped base. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 10R4/10; ext. surf. 10R4/12. Visual characteristics: hard, rough fabric, with abundant frequency of ill-sorted and large-medium size white, red, black and grey inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2635.9 Rim and attack of the handle (Fig. 171)
Provenience: s. 2635. Diameter 10.6; wall thickness 0.9-0.7. Thickish beaded rim and attack of elliptical handle. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 2.5Y6/6; ext. surf. 7.5YR6/10. Visual characteristics: hard, rough fabric, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2653.10 Rim and handle
Provenience: s. 2635. Diameter 16; handle thickness 0.7-1, width 4.3. Triangular rim, handle with one ridge running down it. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 2.5YR5/12; ext. surf. 7.5YR6/8. Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2653.11 Base (Figs. 172, 173)
Provenience: s. 2635. Wall thickness 0.9-1-1.1; max height 8.3. Short hollow base. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 10Y4/4; ext. surf. 7.5YR4/6. Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2653.12 Handle
Provenience: s. 2653. Thickness 1.1, width 5 *c.* Ribbon-shaped handle, with a narrow groove. Production: Tejo/Sado valley

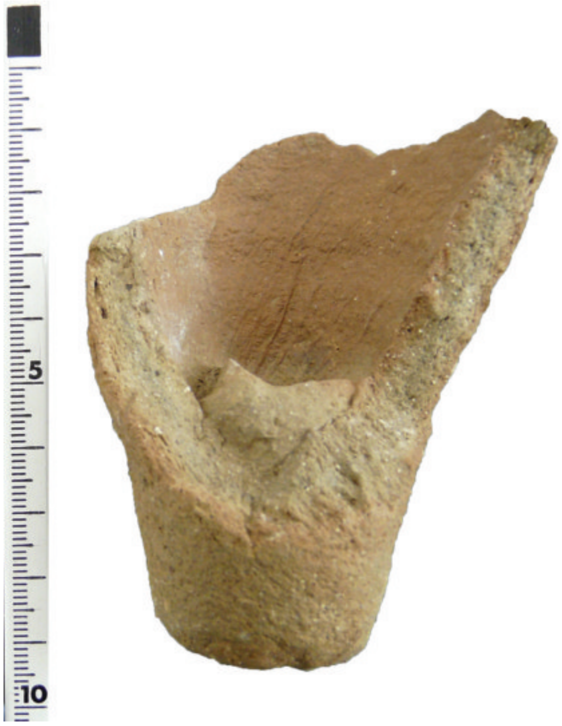

Fig. 172 Short hollow base of Almagro 51 c (no. inv. AMM1996B2653.11).

(?). Fabric colour: core 2.5YR6/12; ext. surf. 7.5YR6/10. Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size inclusions: on the surface numerous white, grey, black, red grains. Some horizontal and hollow cracks. Black sand.

AMM1996B2653.13 Handle
Provenience: s. 2635. Thickness 1.7, width 4.5. Bifid handle. Classification: Gauloise 4. Production: Narbonne region. Contents: wine. Fabric colour: core 7.5Y8/6; ext. surf. 7.5YR 8/4–7/4 (buff). Visual characteristics: soft smooth fabric, with fine texture; moderate frequency of well-assorted and variable size black and brown inclusions and quartz. The fracture is smooth to irregular, while the surfaces are rough. Date range: (mid) first AD - third century AD. References: Laubenheimer 1985; Peacock and Williams 1986: 142-143; Laubenheimer 2001b; Laubenheimer and Gisbert Santonja 2001; Laubenheimer 2005; Laubenheimer and Schmitt 2009.

AMM1996B2736.14 Handle
Provenience: s. 2736. Thickness 2.4-2.5; max height 3.2. Bifid handle. Classification: Dressel 2-4. Production: Campania, central Italy (?). Contents: wine. Fabric colour: core 7.5YR5/8; ext. surf. 7.5YR6/10. Visual characteristics: Campanian black sand fabric. Very hard, harsh fabric with moderate frequency of ill-sorted and variable size black, white and grey inclusions. Date range: 70 BC - early third century AD. References: Zevi 1966; Hesnard 1977; Hesnard and Lemoine 1981; Arthur 1983; Peacock and Williams 1986: 105-106; Tchernia 1986; Panella 2001; Williams, Panella and Keay 2005.

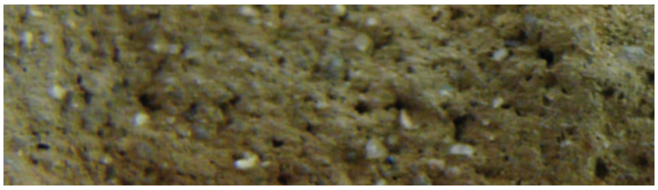

Fig. 173 No. inv. AMM1996B2653.11: the fabric.

AMM1996B2736.15 Rim and handle
Provenience: s. 2736. Diameter 18.4; max height 4.2; handle thickness 2.6. Thick jutting rim, with one rounded handle, that curves from the rim; ovoid-shaped handle. Classification: Almagro 50. Production: Tejo/Sado valleys. Contents: fish products. Fabric colour: core 7.5YR5/8; ext. surf. 7.5YR7/10. Visual characteristics: hard, rough fabric with moderate frequency of ill-sorted and variable size black, white, red and grey inclusions. Date range: third – fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1996B2736.16 Handle
Provenience: s. 2736. Thickness 1.6, width 4.1. Elliptic handle. Production: Tejo/Sado valleys. Fabric colour: core 7.5YR5/8; ext. surf. 7.5YR6/10. Visual characteristics: hard, rough fabric with abundant frequency of ill-sorted and variable size white, black, grey, red inclusions.

AMM1996B2735.17 Handle
Provenience: s. 2735. Thickness 2.3, width 5. Ovoid-shaped handle, with a thin central groove. Production: Baetican (?). Fabric colour: core 10Y9/4; ext. surf. 10Y9/6. Visual characteristics: hard, rough fabric with abundant frequency of well-assorted and variable size inclusions.

AMM1996B2735.18 Base (Fig. 174)
Provenience: s. 2735. Diameter 3.8; max height *c.* 6.8. Hollow truncated cone-shaped base; attack of the wall. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 7.5YR5/6; ext. surf. 7.5Y8/6. Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2538.20 Shoulder and handle
Provenience: s. 2538. Handle thickness 1.7, width 4.9. Rounded shoulder; handle with two ridges running down it; handle elliptic in section. Production: Tejo/Sado valleys. Fabric colour: core 10R6/14 (red/orange); ext. surf. 10R6/14 (red/orange). Visual characteristics: hard, rough fabric with moderate frequency of ill-sorted and large and medium-size inclusions: on the surface small white grains, medium-size brown grains; few black small-size grains. One large (5 mm *c.*) grain of limestone.

AMM1996B2538.21 Handle (Figs. 175, 176)
Provenience: s. 2538. Thickness 1.9, width 4.7. Curved grooved handle. See no. inv. AMM1996B2538.22. Classification: Gauloise 4. Production: Narbonne region. Contents: wine. Fabric colour: core 7.5Y8/6; ext. surf. 7.5YR 8/4–7/4 (buff). Visual characteristics: soft smooth fabric, with fine texture; moderate frequency of well-assorted and variable size black and brown inclusions and quartz. The fracture is smooth to irregular, while the surfaces are rough. Date range: (mid) first AD - third century AD. References: Laubenheimer 1985; Peacock and Williams 1986: 142-143; Laubenheimer 2001b; Laubenheimer and Gisbert Santonja 2001; Laubenheimer 2005; Laubenheimer and Schmitt 2009.

AMM1996B2538.22 Handle (Fig. 177)
Provenience: s. 2538. Thickness 1.9, width 4.7. Curved grooved handle. See no. inv. AMM1996B2538.2. Classification: Gauloise 4. Production: Narbonne region. Contents: wine. Fabric colour: core 7.5Y8/6; ext. surf. 7.5YR 8/4–7/4 (buff). Visual characteristics: soft smooth fabric, with fine texture; moderate frequency of well-assorted and variable size black and brown inclusions and quartz. The fracture is smooth to irregular, while the surfaces are rough. Date range: (mid) first AD - third century AD. References: Laubenheimer 1985; Peacock and Williams 1986: 142-143; Laubenheimer 2001b; Laubenheimer and Gisbert Santonja 2001; Laubenheimer 2005; Laubenheimer and Schmitt 2009.

AMM1996B2538.23 Rim and part of the wall
Provenience: s. 2538. Diameter unspecified; rim height *c.* 4, thickness 1.3; wall thickness 0.6. Everted collar rim, rectangular in section. High rim, with lip just a bit pendant. Classification: Haltern 70. Production: Guadalquivir valley. Contents: *defrutum*? Wine? Fabric colour: core 10Y8/6; ext. surf. 10Y9/6. Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: 80-60 BC - Antonine period (first century BC - second century AD). References: Peacock and Williams 1986: 115-116; Carreras Monfort 2003; Carreras 2005a; Berni Millet 2011; Carreras Monfort and Berni Millet 2012; Werff 2002.

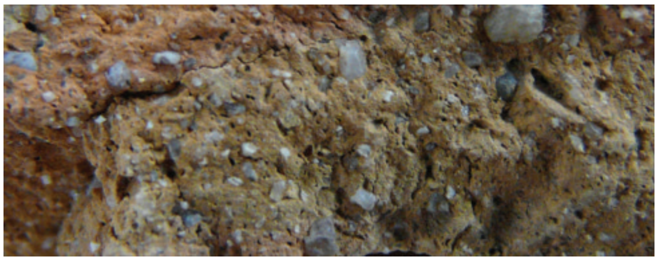

Fig. 174 No. inv. AMM1996B2735.18: the fabric.

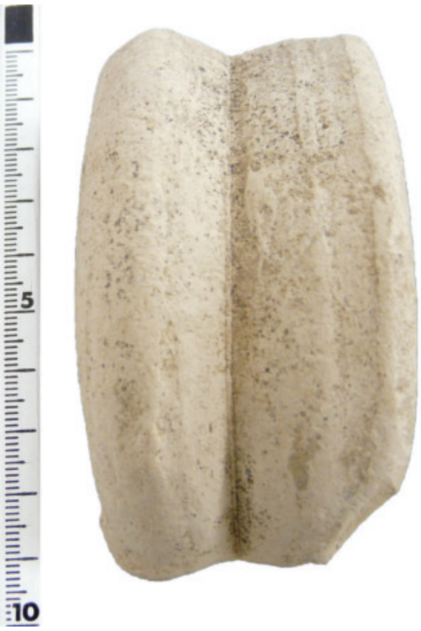

Fig. 175 Curved grooved handle of Gauloise 4 (no. inv. AMM1996B2538.21).

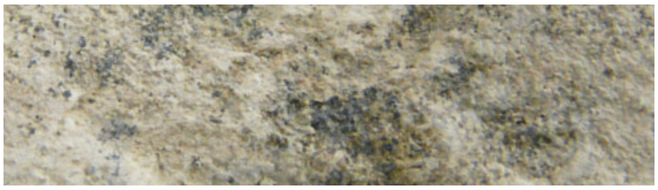

Fig. 176 No. inv. AMM1996B2538.21: the fabric.

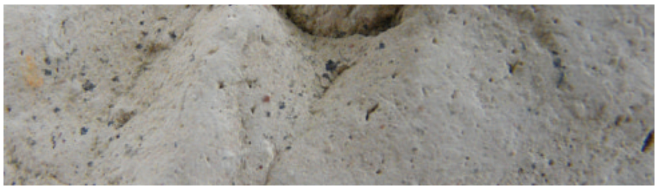

Fig. 177 No. inv. AMM1996B2538.22: the fabric.

AMM1996B2538.24 Rim and attack of the handle
Provenience: s. 2538. Diameter 10; max height 5.5; wall thickness 0.9; handle thickness 2.1, width 4.3. Triangular-shaped rim and ovoid-shaped handle. Classification: Almagro 51 c. Production: local production (?). Contents: fish-sauce products. Fabric colour: core 7.5YR3/2; ext. surf. 7.5YR6/8; partially preserved engobe 7.5YR4/2. Visual char-

acteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1996B2338.27 Rim and attack of the handle
Provenience: s. 2338. Int. diameter 9; max height 3.1; wall thickness 0.8; handle thickness 1.Rim turned outward, attack of the handle between the rim and the short neck. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 7.5YR3/2; ext. surf. 7.5YR5/8. Visual characteristics: hard-fired, rough fabric, with abundant small and medium size inclusions: grey, white, brown grains; quartz. Date range: third – (mid) fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM1996B2338.28 Handle
Provenience: s. 2338. Thickness 1.6, width 4.4. Long ovoid-shaped handle. Production: Tejo valleys. Fabric colour: core 10R4/12 (dark orange); ext. surf. 7.5YR6/10. Visual characteristics: hard, rough fabric with abundant frequency of well-assorted and large and medium size inclusions.

AMM1996B2633.40 Base
Provenience: s. 2633. Width max 5.5; height max 6.4. Long hollow base. Classification: Almagro 51 c. Production: local production? Contents: fish-sauce products. Fabric colour: core 7.5YR7/6 (grey); ext. surf. 7.5YR7/8 (pink). Visual characteristics: hard, rough fabric, irregular texture, with abundant frequency of ill-sorted and variable size white, red, black and grey inclusions, limestone and quartz. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

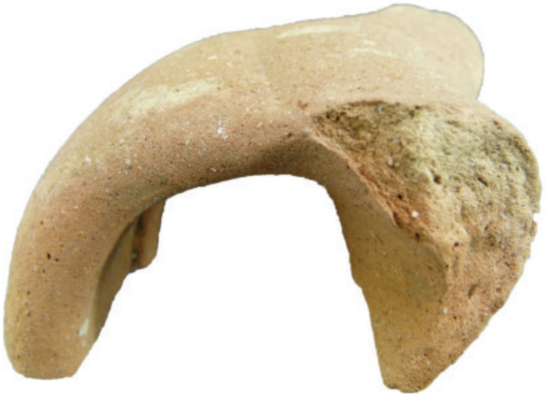
Fig. 178 Rounded-everted rim and handle of Lusitana 9 (no. inv. AMM1996B2633.41).

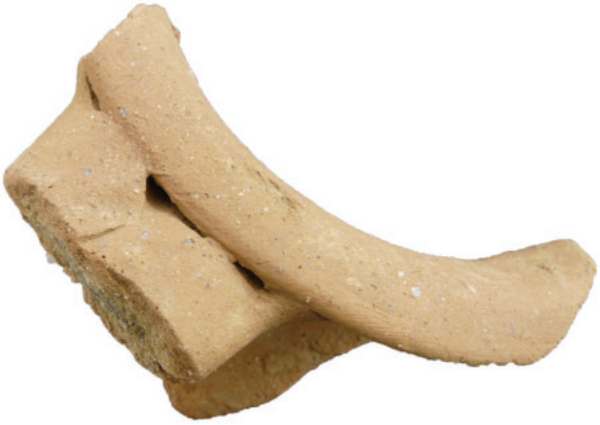
Fig. 179 Two fragments reassembled of everted rim and attack of the ovoid-shaped handle of Lusitana 9 (no. inv. AMM1996B2438.43).

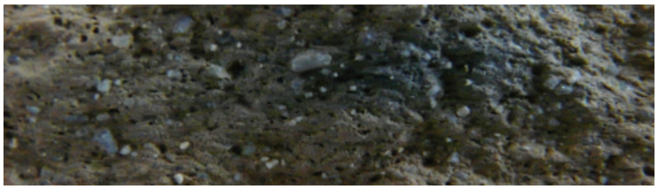
Fig. 180 No. inv. AMM1996B2438.43: the fabric.

AMM1996B2633.41 Rim and handle (Fig. 178)
Provenience: s. 2633. Diameter 10.2; handle thickness *c.* 1.4. Rim rounded-everted; handle ridged and curved from the rim. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core Muns 7.5YR6/4 (grey); 7.5YR7/6. Visual characteristics: hard-fired, rough-harsh fabric, irregular texture with abundant small and medium size inclusions: grey, white grains; quartz. Date range: third – (mid) fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM1996B2438.43 Rim and handle (Figs. 179, 180)
Provenience: s. 2438. Diameter 13. Everted rim with the attack of the ovoid-shaped handle that curves from the rim. Two fragments reassembled. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: double grey core 7.5YR3/2, 7.5YR5/4; 7.5YR7/8. Visual characteristics: hard-fired, rough-harsh fabric, irregular texture with abundant small and medium size inclusions: grey, white grains; quartz. Date range: third – (mid) fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

III.8 THE GLASS

Mario da Cruz

The data are presented here according to the following order: progressive number, inventory number, object, provenience, dimensions, description, colour, chronology.

The inventory number is composed on the basis of the: location (AM), year (00), sector (B), square (Q0000), internal progressive number. Dimensions are given in millimiters.

Abbreviations

AFAV – Association Française pour l'Archéologie du Verre
AIHG – Association Internationale pour l'Histoire du Verre
AR – glass vessel type *Augusta Rauricorum* (Rütti 1991)
Is. – glass vessel type Isings (Isings 1957)
Trier – glass vessel type Trier (Goethert-Polaschek 1980)

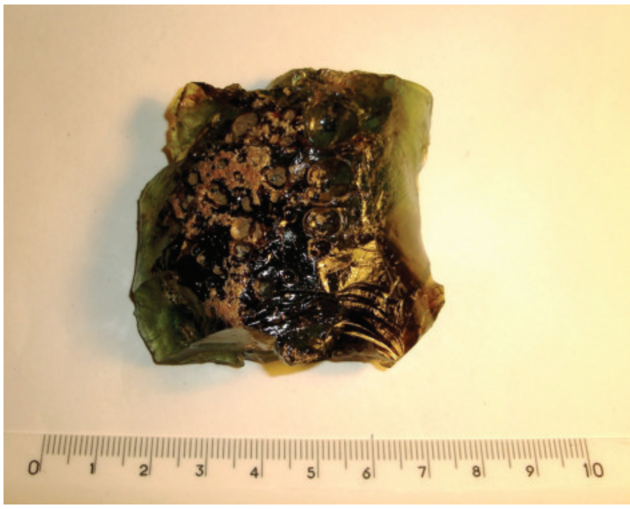

Fig. 181 Lump of raw glass no. 1.

Raw Glass

1 – AM01B-Q2635-166v **Raw glass** (Fig. 181)
Provenience: s. 2635. 1 large lump with a spongy surface. Yellow/green with yellow/brown clouds. Roman.

2 – AM95B-Q2537-31v **Raw glass**
Provenience: s. 2537. 1 lump and 2 chips. Blue/green. Roman.

3 – AM01B-Q2633-159v **Raw glass**
Provenience: s. 2633. 1 chip. Yellow/green.

4 – AM99B-Q2633-134v **Raw glass**
Provenience: s. 2633. 1 chip with sand incrustations. Dark yellow/green.

5 – AM99B-Q2634-147v **Raw glass**
Provenience: s. 2634. 4 small lumps, one with a spongy surface and impurities. Dark yellow/green

6 – AM99B-Q2634-148v **Raw glass**
Provenience: s. 2634. 1 chip. Pale yellow/green.

7 – AM01B-Q2734-193v **Raw glass**
Provenience: s. 2634. 3 chips. Yellow/green.

8 – AM01B-Q2733-175v **Raw glass**
Provenience: s. 2733. 1 chip. Pale yellow/green.

9 – AM01B-Q2534-154v **Raw glass**
Provenience: s. 2534. 1 chip. Pale yellow/green.

10 – AM01B-Q2534-155v **Raw glass**
Provenience: s. 2534. 2 chips. Yellow/green.

11 – AM01B-Q2635-167v **Raw glass**
Provenience: s. 2635. 1 chip with impurities. Yellow/green.

12 – AM94B- Q[---]-2v **Raw glass**
Provenience: unknown. 2 chips with impurities. Yellow/green.

13 – AM95B-Q2133-10v **Raw glass**
Provenience: s. 2133. 1 lump with adherent clay, probably from a crucible. Yellow/green.

14 – AM95B-Q2233-13v **Raw glass**
Provenience: s. 2233. 1 lump. Yellow/green.

15 – AM96B-Q2338-99v **Raw glass**
Provenience: s. 2338. 2 chips. Yellow/green.

16 – AM96B-Q2338-102v **Raw glass**
Provenience: s. 2338. 10 lumps and chips with sand incrustations. Yellow/green.

17 – AM95B-Q2436-18v **Raw glass**
Provenience: s. 2436. 2 chips. Yellow/green.

18 – AM95B-Q2537-26v **Raw glass**
Provenience: s. 2537, bag 3704. 8 chips. Yellow/green.

19 – AM95B-Q2537-32v **Raw glass**
Provenience: s. 2537, bag 3691. 1 lump and 1 chip.

20 – AM95B-Q2537-39v **Raw glass**
Provenience: s. 2537, bag 3688. 4 chips. Pale yellow/green.

21 – AM95B-Q2537-41v **Raw glass**
Provenience: s. 2537, bag 3706. 4 lumps with sand incrustations. Yellow/green.

22 – AM95B-Q2537-43v **Raw glass**
Provenience: s. 2537, bag 3706. 1 chip. Pale green/yellow.

23 – AM95B-Q2537-61v **Raw glass**

Provenience: s. 2537, bag 3702. 6 small chips. Pale yellow/green.

24 – AM95B-Q2537-77v **Raw glass**
Provenience: s. 2537, bag 3740. *c.* 8 chips. Pale yellow/green.

25 – AM95B-Q2537-42v **Raw glass**
Provenience: s. 2537, bag 3706. 2 chips. Pale yellow/green.

26 – AM95B-Q2537-44v **Raw glass**
Provenience: s. 2537, bag 3706. 8 lumps probably used for trail decoration. Dark blue/green.

27 – AM95B-Q2537-74v **Raw glass**
Provenience: s. 2537, bag 3730. 3 chips. Blue/green.

28 – AM95B-Q2537-78v **Raw glass**
Provenience: s. 2537, bag 3740. 1 chip. Yellowish brown.

29 – AM95B-Q2537-79v **Raw glass**
Provenience: s. 2537, bag 3740. *c.* 10 chips with sand incrustations. Blue/green.

30 – AM95B-Q2537-83v **Raw glass**
Provenience: s. 2537, bag 3705. *c.* 14 chips, some with clay incrustations. Blue/green.

31 – AM96B-Q2635-115v **Raw glass**
Provenience: s. 2635. 4 chips with impurities. Yellow/green.

32 – AM95B-Q2637-94v. *c.* 30 chips. Pale yellow/green.

33 – AM96B-Q2736-127v **Raw glass**
Provenience: s. 2636. *c.* 30 chips. Pale yellow/green.

33 – Raw glass
Provenience: s. 2735. 3 chips. Pale yellow/green.

34 – AM96B-Q2736-130v **Raw glass**
Provenience: s. 2736. *c.* 7 chips. Yellow/green with brown clouds.

35 – AM95B-Q2637-97v **Glass scoria**
Provenience: s. 2736. 3 lumps of a very impure and altered glass. Pale yellow/green.
Roman.

Waste glass

36 – AM95B-Q2537-92v **Moil** (Fig. 182a)
Provenience: s. 2537. Rim diameter 118mm. 1 lid-like moil with cracked-off edge. Pale yellow/green. Late Roman.

37 – AM96B-Q2635-117v M**oil** (Fig. 182b)
Provenience: s. 2635. Rim diameter 120mm. 1 lid-like moil with cracked-off edge. Yellow/green. Late Roman.

38 – AM95B-Q2537-84v **Moil** (Fig. 183a)
Provenience: s. 2537. Rim diameter 94mm. 1 lid-like moil with S profile and cracked-off edge. Blue/green. Late Roman.

39 – AM95B-Q2537-80v **Moil** (Fig. 183b)
Provenience: s. 2537. Rim diameter 94mm. 1 lid-like moil with S profile and cracked-off edge. Pale yellow/green. Late Roman.

40 – AM95B-Q2537-51v **Moil** (Fig. 183c)
Provenience: s. 2537. Rim diameter 100mm. 1 lid-like moil with a pronounced S profile and cracked-off edge. Blue/green. Late Roman.

41 – AM95B-Q2537-30v **Moil** (Fig. 183d)
Provenience: s. 2537. Rim diameter 130mm. 1 lid-like moil with cracked-off edge and thin walls. Pale yellow/green. Late Roman.

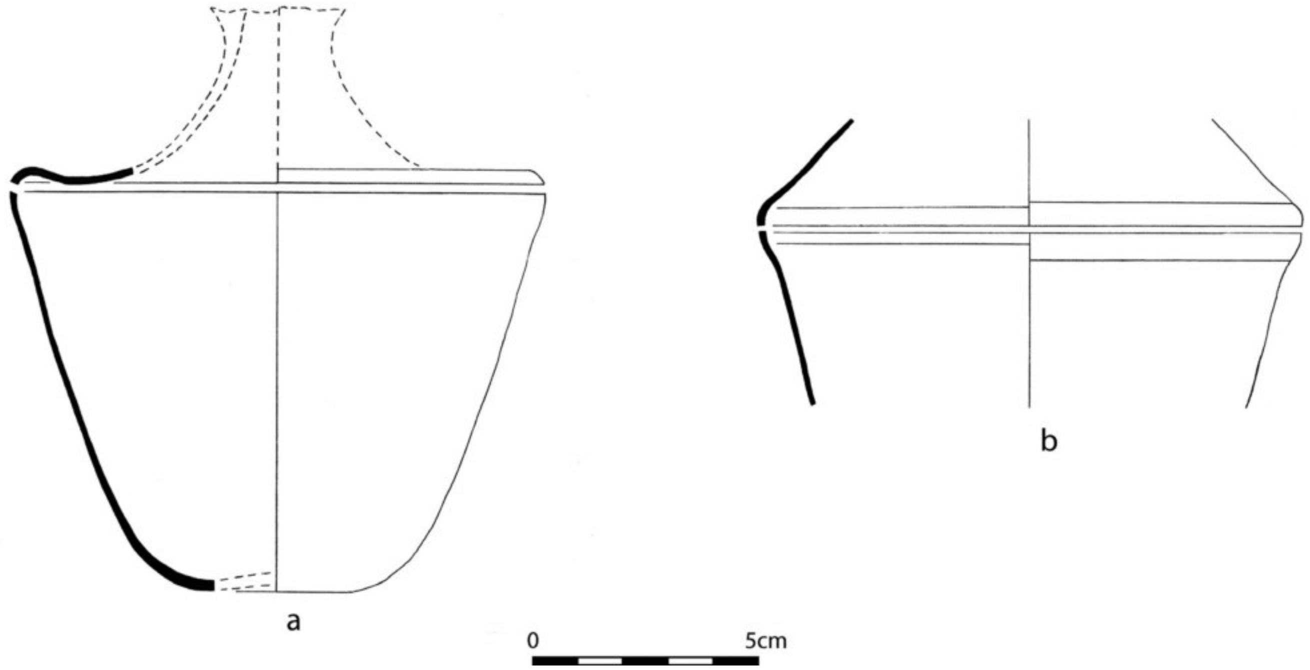

Fig. 182 *Ammaia*, Southern Gate. Bowls with cracked-off edges in association with their lid-like moils. a) Rim of moil no. 36 in connection with conical plain cup no. 89; b) rim of moil no. 37 in connection with conical plain cup no. 90.

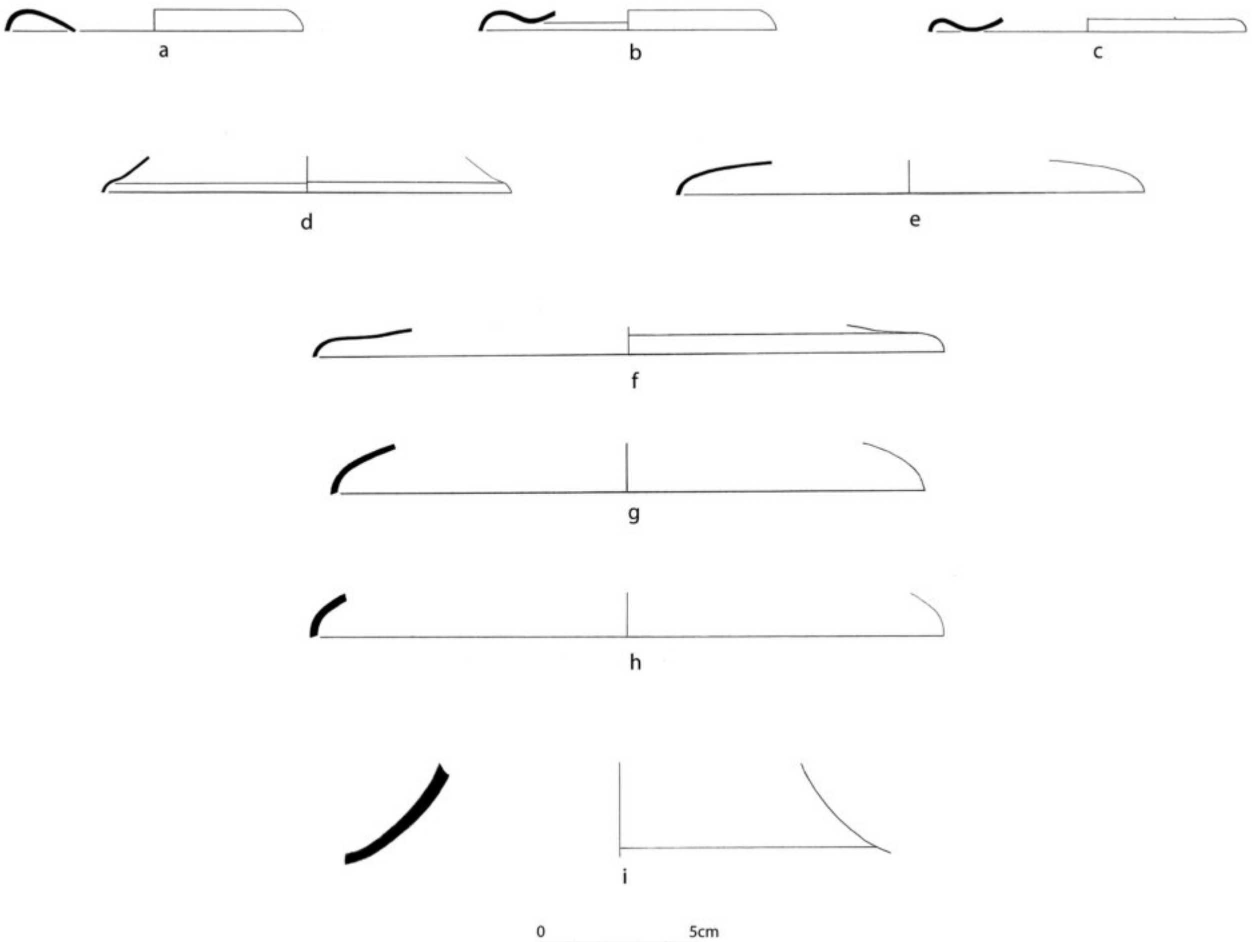

Fig. 183 *Ammaia*, Southern Gate. a) moil no. 38; b) moil no. 39; c) moil no. 40; d) moil no. 41; e) moil no. 42; f) moil no. 43; g) moil no. 44; h) moil no. 45; i) moil no. 46.

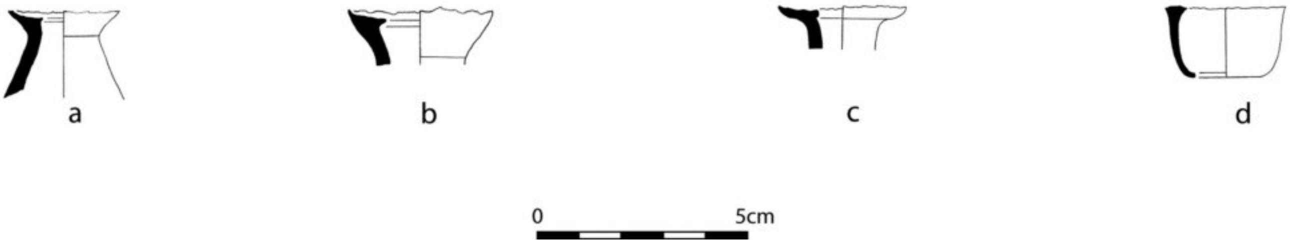

Fig. 184 *Ammaia*, Southern Gate. a) moil rim no. 47; b) moil rim no. 48; c) moil rim no. 49; d) moil rim no. 50.

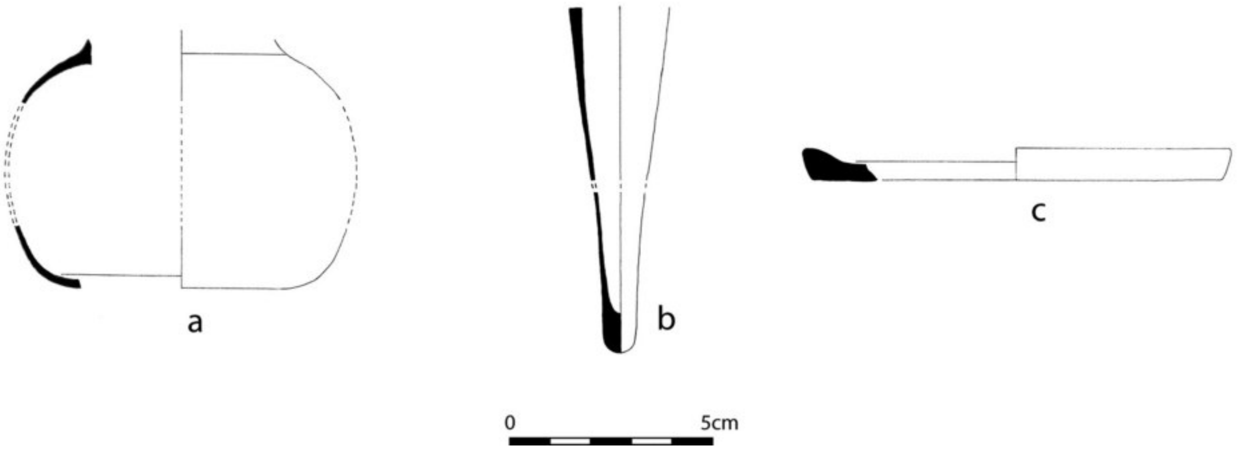

Fig. 185 *Ammaia*, Southern Gate. a) glass bubble no. 51; b) glass tube no. 52; c) lid (?) no. 53.

42 – AM94B- Q[---]-1v **Moil** (Fig. 183e)
Provenience: unknown. Rim diameter 148mm. 2 fragments of a lid-like moil with cracked-off edge. Pale blue/green. Late Roman.

43 – AM95B-Q2537-35v **Moil** (Fig. 183f)
Provenience: s. 2537. Rim diameter 200mm. 1 lid-like moil with cracked off-edge and thin walls. Pale blue/green. Late Roman.

44 – AM95B-Q2537-75v Moil (Fig. 183g)
Provenience: s. 2537. Rim diameter 182mm. 1 lid-like moil with a C profile and cracked-off edge. Yellow/green. Late Roman.

45 – AM96B-Q2735-124v **Moil** (Fig. 183h)
Provenience: s. 2537. Rim diameter 200mm. 1 lid-like moil with a C profile, thick walls and cracked-off edge. Yellow/green. Late Roman.

46 – AM96B-Q2735-121v **Moil** (Fig. 183i)
Provenience: s. 2735. 1 middle fragment of a large and thick lid-like moil (no rim). Dark yellow/green. Late Roman.

47 – AM95B-Q2537-81v **Moil** (Fig. 184a)
Provenience: s. 2537. "Rim" diameter 25/5mm. 1 upper fragment of a moil with a constriction and funnel-like body. Pale yellow/green. Late Roman.

48 – AM95B-Q2537-34v **Moil** (Fig. 184b)
Provenience: s. 2537. "Rim" diameter 34/8mm. 1 upper fragment of a moil with tiny fragments of metal adherent to the edge. Blue/green. Late Roman.

49 – AM95B-Q2537-56v **Moil** (Fig. 184c)
Provenience: s. 2537. "Rim" diameter 30/5mm. 1 upper fragment of a moil with a pronounced mark left by the blowing iron. Pale yellow/green. Late Roman.

50 – AM95B-Q2537-55v **Moil** (Fig. 1844d)
Provenience: s. 2537. "Rim" diameter 30mm. 1 moil with both edges, the bottom fire-rounded. Pale yellow/green. Late Roman.

51 – AM95B-Q2537-57v **Glass bubble** (Fig. 185a)
Provenience: s. 2537. "Rim" diameter 48mm. Upper and lower fragments of a glass bubble. Failed attempt to make a vessel. Pale yellow/green. Late Roman.

52 – AM95B-Q2537-58v **Glass tube** (Fig. 185b)
Provenience: s. 2537. *c*. 85mm long, A sort of test tube with thin walls and a thick tip. Failed attempt to make a vessel? Pale yellow/green. Late Roman.

53 – AM95B-Q2133-11v **Lid?** (Fig. 185c)
Provenience: s. 2133. Diameter 104mm. A sort of irregular lid with a triangular thick rim. Yellow/green. Late Roman.

54 – AM95B-Q2537-33v **Waste glass with tool marks** (Fig. 186a)
Provenience: s. 2537. Thick trail pulled and folded with pincers and jack marks. Blue/green. Late Roman.

55 – AM95B-Q2537-59v **Waste glass with tool marks** (Fig. 186b)
Provenience: s. 2537. Trimmed glass with pincers and jack marks. Yellow/green. Late Roman.

56 – AM95B-Q2537-27v **Pontil wrap** (Fig. 186c)
Provenience: s. 2537. Diameter 20mm. A sort of small roundel from a pontil. Yellow/green. Late Roman.

57 – AM95B-Q2537-54v **Lid (?)**
Provenience: s. 2537. Diameter 80mm. A sort of lid with a thick rim. Yellow/green.

58 – AM99B-Q2634-146v **Moil**
Provenience: s. 2634. Diameter c. 110mm. 1 fragment of lid-like moil. Yellow/green.

59 – AM95B-Q2537-28v.
Provenience: s. 2537. Diameter 112mm.1 fragment of a thick walled lid-like moil. Blue/green.

60 – AM95B-Q2436-22v.
Provenience: s. 2436. Diameter *c.* 160mm 1 fragment of a lid-like moil. Yellow/green.

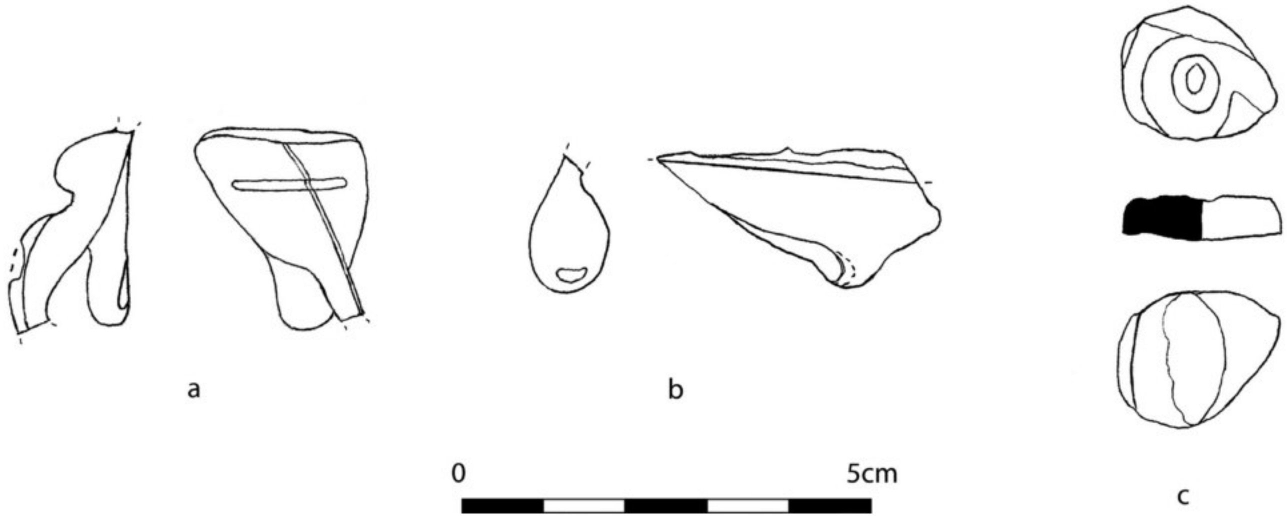

Fig. 186 a) waste glass with tool marks no. 54; b) waste glass with tool marks no. 55; c) pontil wrap no. 56.

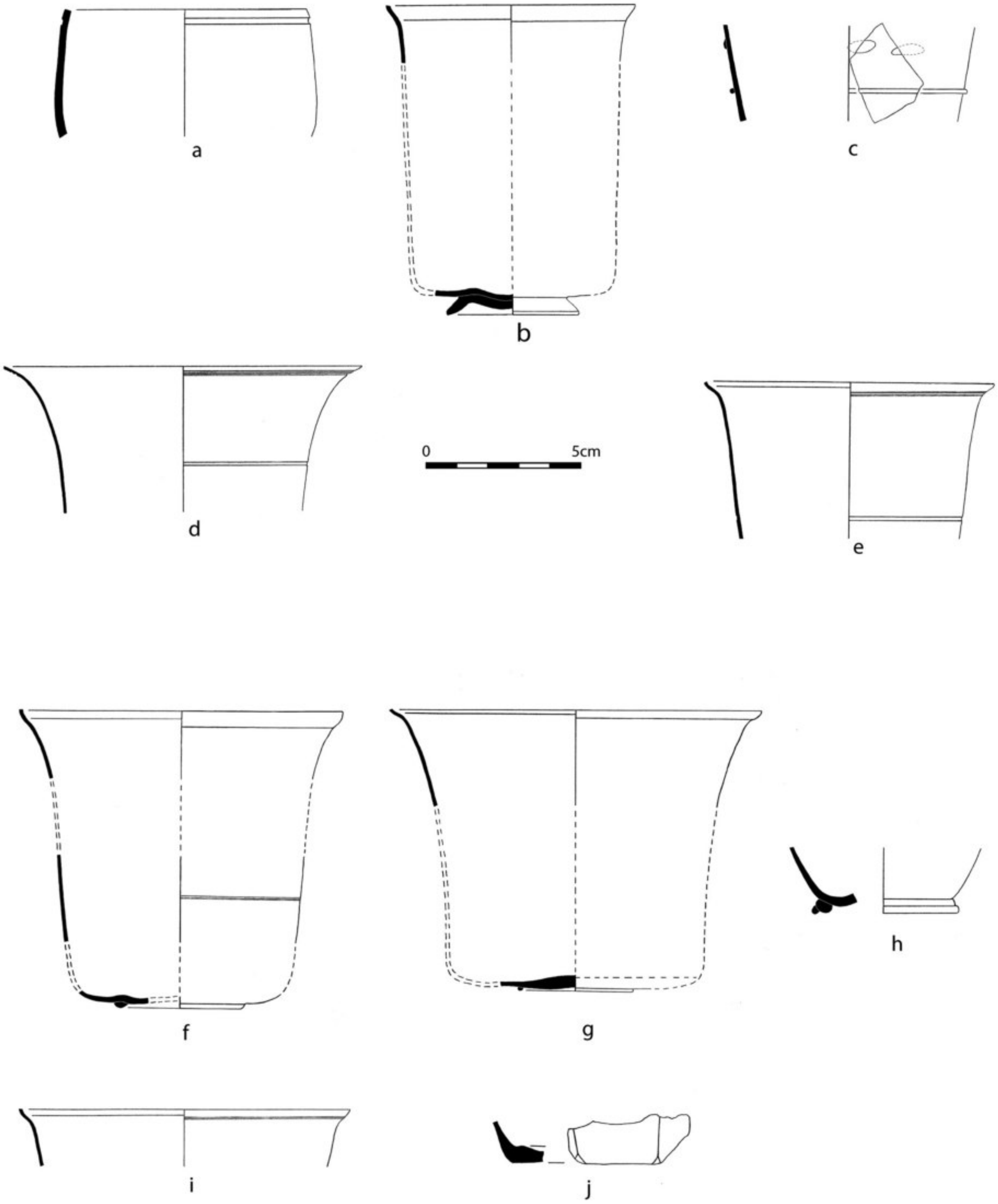

Fig. 187 *Ammaia*, Southern Gate. a) Hofheim cup no. 79; b) cylindrical beaker/cup with separately blown foot no. 80; c) conical beaker no. 81; d) conical beaker no. 82; e) conical beaker no. 83; f) conical beaker no. 84; g) conical beaker no. 85; h) conical beaker no. 86; i) conical beaker or cup no. 87; j) beaker with faceted base no. 88.

61 – AM95B-Q2537-29v.
Provenience: s. 2537. Diameter 110mm. 1 fragment of a thin walled lid-like moil. Blue/green.

62 – AM95B-Q2537-36v.
Provenience: s. 2537. Diameter 60mm. 1 fragment of a thick walled lid-like moil. Pale yellow/green.

63 – AM95B-Q2537-52v.
Provenience: s. 2537. Diameter 110mm 1 fragment of a shallow lid-like moil. Greenish yellow.

64 – AM95B-Q2537-53v.
Provenience: s. 2537. Diameter 170mm. 1 fragment of a thick walled lid-like moil. Greenish yellow.

65 – AM95B-Q2537-66v.
Provenience: s. 2537. Diameter 110mm. 1 fragment of a lid-like moil. Pale blue/green.
66 – AM95B-Q2637-95v.
Provenience: s. 2637. Diameter *c*. 35mm. 1 upper fragment of a large moil. Pale blue/green.
67 – AM96B-Q2735-125v.
Provenience: s. 2735. Diameter 170mm. 1 fragment of a large lid-like moil. Yellow/green.
68 – AM96B-Q2735-122v.
Provenience: s. 2735. Diameter 190mm. 1 frag. of a large thick walled lid-like moil. Greenish yellow.
69 – AM99B-Q2634-143v.
Provenience: s. 2634. Diameter *c*. 40mm. 1 fragment of pontil wrap. Yellow/green.
70 – AM01B-Q2733-179v.
Provenience: s. 2733. Trimmed glass with pincers marks. Yellow/green.
71 – AM95B-Q2133-12v.
Provenience: s. 2133. Drop and trimmed glass with pincers marks. Yellow/green.
72 – AM96B-Q2338-103v.
Provenience: s. 2338. Trimmed glass with tool marks. Yellow/green.
73 – AM95B-Q2436-19v.
Provenience: s. 2436. Trimmed glass with tool marks. Yellow/green.

Cast glass

74 – AM01B-Q2533-153v **Ribbon glass**
Provenience: s. 2533. Convex body fragment with a ribbon glass pattern: a dark blue ribbon followed by a yellow ribbon made by a colourless ribbon in between two layers of opaque yellow glass in a sort of “sandwich” technique. End of first century BC – first half of first century AD.
75 – AM01B-Q2533-152v **Ribbed bowl**
Provenience: s. 2533. Rim diameter *c*. 170mm. Fragment of an edge rounded rim with a rib gasp. Blue/green. First century AD.
76 – AM01B-Q2635-164v **Ribbed bowl**
Provenience: s. 2535. Rim diameter *c*. 170mm. Fragment of an edge rounded rim with a rib gasp. Blue/green. First century AD.
77 – AM95B-Q[---]-9v **Ribbed bowl**
Provenience: extension of s. 2133. Lower body fragment with three horizontal wheel-cut lines on the inner surface and one vertical rib on the outer surface. Yellowish brown. End of first century BC – middle of first century AD.
78 – AM01B-Q2633-160v **Ribbed bowl**
Provenience: s. 2633. Body fragment with three visible ribs. Dark-blue (Pantone 072-A). End of first century BC – middle of first century AD.

Blown glass

79 – AM99B-Q2433-133v **Hofheim cup** (Fig. 187a)
Provenience: s. 2433. Rim diameter 78mm.
Slightly in turned rim, edge cracked off and ground smooth, straight upper body and convex and thicker lower body. Horizontal wheel-cut line on the rim. Blue-green. First century AD.
80 – AM01B-Q2635-168v **Cylindrical beaker/cup with separately blown foot** (Fig. 187b)
Provenience: s. 2635. Rim diameter 80mm, base diameter 42mm. Out-turned rim, edge cracked-off and ground smooth, straight upper body, almost straight base with separately blown foot with out-splayed, cracked-off and ground edge. Colourless. End of first century – beginning/meddle of second century.
81 – AM01B-Q2734-200v **Conical beaker (?) with relief decoration** (Fig. 187c)
Provenience: s. 2734. Fragment of lower conical body with horizontal applied trail and two oval kinds of drops wheel-polished. Colourless. End of first – mid second century.
82 – AM01B-Q2533-151v **Conical beaker or cup, undefined type** (Fig. 187d)
Provenience: s. 2533. Rim diameter 115mm. Out-turned rim, edge cracked-off and ground smooth, slight conical upper body, very thin walls. Two horizontal wheel-cut lines below the rim and one in the upper body. Colourless. End of first – mid second century.
83 – AM01B-Q2533-150v **Conical beaker or cup** (Fig. 187e)
Provenience: s. 2533. Rim diameter 93mm.
Out-turned rim, edge cracked-off, slight conical upper body, very thin walls. Two horizontal wheel-cut lines below the rim and one in meddle of the body. Colourless. End of first – fourth century.
84 – AM96B-Q2736-128v **Conical beaker with applied trailed ring on the base** (Fig. 187f)
Provenience: s. 2736. Rim diameter 104mm.
Thin walled fragments of rim, body and base: slightly out-turned rim, edge cracked-off and ground smooth, conical body, curved change of angle, flat or slight concave base with applied trailed ring. One horizontal wheel-cut line in lower body. Colourless. End of third – fourth century.
85 – AM96B-Q2635-112v **Conical beaker with applied trailed ring on the base** (Fig. 187g)
Provenience: s. 2635. Rim diameter 120mm. Thin walled fragments of rim and base: out-turned rim, edge cracked-off and ground smooth, conical upper body, flat base with applied trailed ring very thin. Colourless. End of third – fourth century.

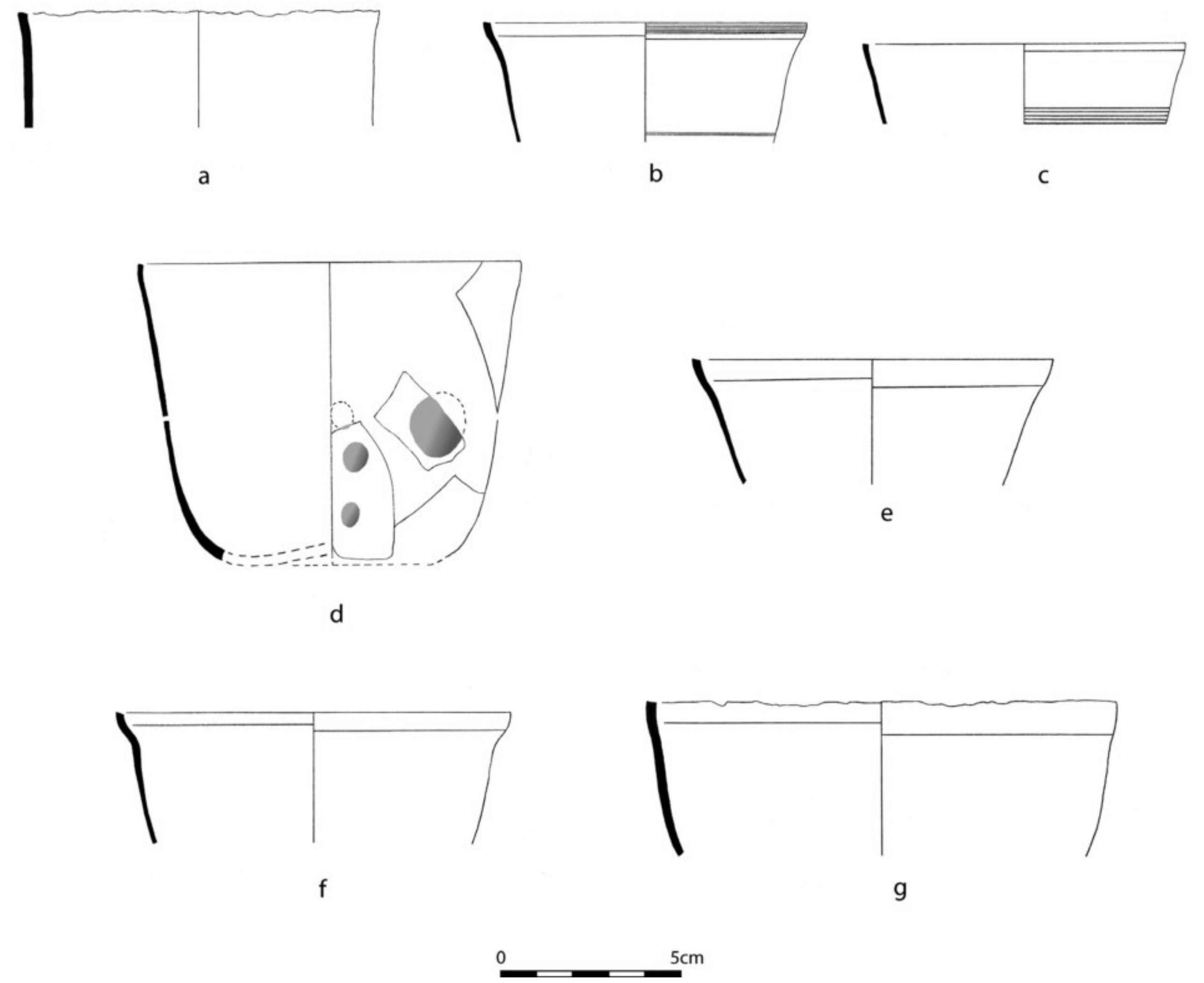

Fig. 188 a) conical or convex plain cup no. 91; b) conical or convex cup no. 93; c) conical or convex cup no. 94; d) conical cup no. 95, e) convex cup no. 96; f) convex cup no. 97; g) convex or hemispherical cup no. 98.

86 – AM01B-Q2734-188v **Conical beaker (?) with applied trailed ring on the base** (Fig. 187h)
Provenience: s. 2734. Base diameter 43mm. Conical lower body, curved change of angle, concave base with applied double trailed ring. Colourless. End of third – fourth century.

87 – AM01B-Q2734-184v **Conical beaker or cup** (Fig. 187i)
Provenience: s. 2734. Rim diameter 106mm. Thin walled fragments of rim: slightly out-turned rim, edge cracked-off and ground smooth, conical body. Soft horizontal wheel-cut lines above rim. Colourless. End of first – fourth century.

88 – AM96B-Q2736-131v **Beaker with faceted base** (Fig. 187j)
Provenience: s. 2736. Thick base with 3 preserved facets and an inside frame at the angle. Colourless. Third – fourth century.

89 – AM95B-Q2537-91v **Conical plain cup** (Fig. 182a)
Provenience: s. 2537. Rim diameter 120mm; height 88mm. Almost complete profile: very slightly curved rim, edge cracked-off unworked, conical wide body, slight concave vase. Originally detached from moil no. 36. Pale yellow/green. Fourth century.

90 – AM96B-Q2635-113v **Conical plain cup** (Fig. 182b)
Provenience: s. 2635. Rim diameter 120mm. Slightly curved rim, edge cracked-off and left unworked, conical upper body. Yellow/green. Fourth century.

91 – AM99B-Q2634-141v **Conical or convex plain cup** (Fig. 188a)
Provenience: s. 2634. Rim diameter 100mm. 4 fragments of rim: very slightly curved rim, edge cracked-off and left unworked, in a very rough way, cylindrical upper body. Thick walls. Pale yellow/green. Fourth century.

92 – AM99B-Q2633-138v **Conical or convex cup**
Provenience: s. 2633. Rim diameter 100mm. Almost straight rim, edge cracked-off and ground smooth, conical upper body. Horizontal bands of wheal-cut lines below the rim and on the upper body. Yellow/green. Fourth century.

93 – AM95B-Q[---]-4v **Conical or convex cup** (Fig. 188b)
Provenience: unknown. Rim diameter 90mm.
Slightly curved rim, in S profile, edge cracked-off and left unworked, conical upper body. Horizontal bands of wheal-cut lines on the rim and in the body. Yellow/green. Fourth century.

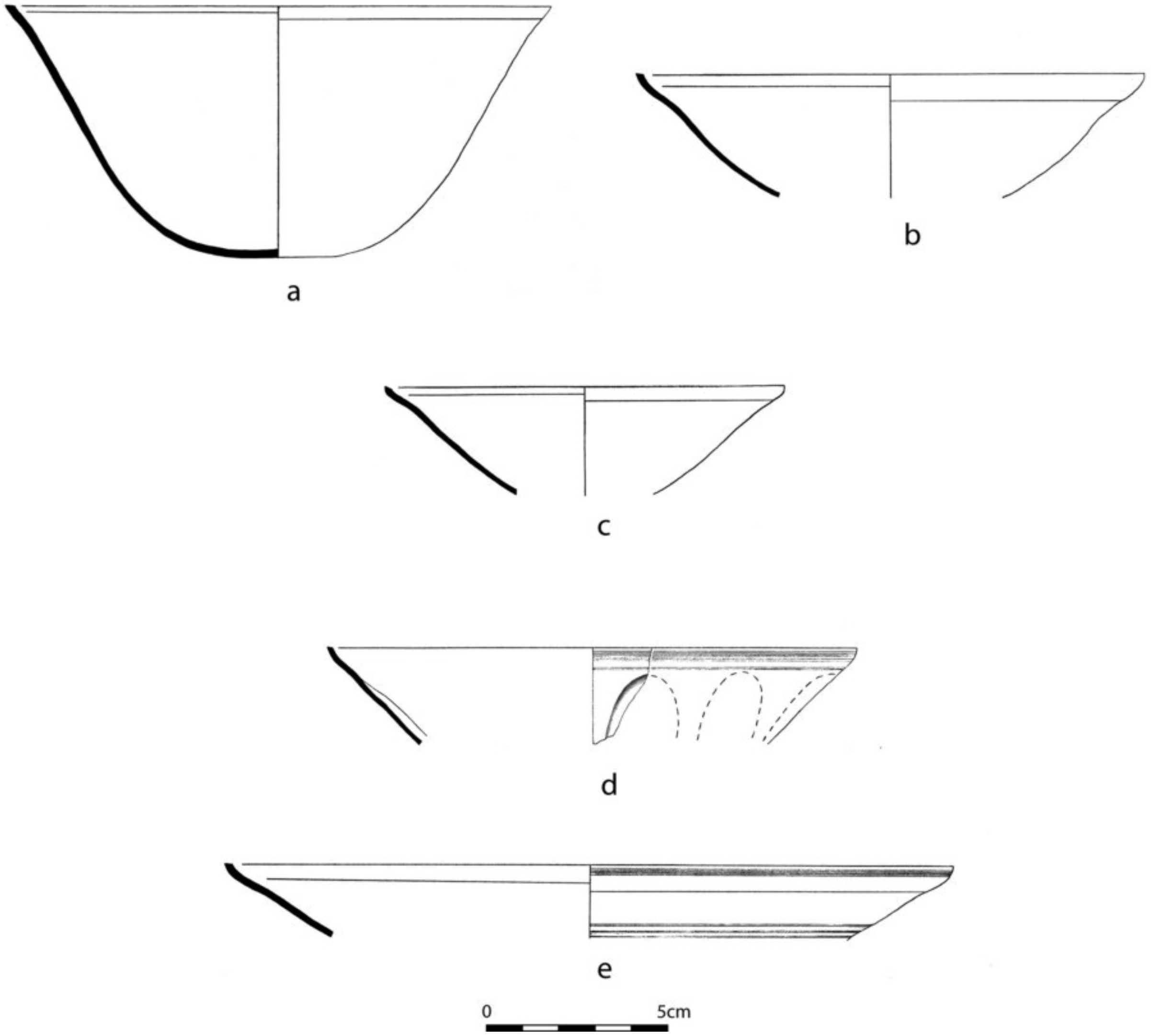

Fig. 189 *Ammaia*, Southern Gate. a) convex bowl no. 99; b) shallow convex bowl no. 100; c) shallow convex bowl no. 101; d) shallow convex bowl with indents no. 102; e) shallow convex bowl/plate no. 103.

94 – AM96B-Q2338-101v **Conical or convex cup** (Fig. 188c)
Provenience: s. 2338. Rim diameter 90mm.
Very slightly curved rim, almost straight, edge cracked-off and left unworked, conical upper body. Horizontal bands of wheal-cut lines on the rim and in the body. Greenish colourless. Fourth century.

95 – AM95B-Q2537-93v **Conical cup with applied blobs** (Fig. 188d)
Provenience: s. 2537. Rim diameter 116mm; height 84mm. Almost complete profile: very slightly curved rim, edge cracked-off and left unworked, convex to conical body. One big blob and at least 3 small in contrasting colour. Pale yellow/green with translucent blue blobs. End of fourth – fifth century.

96 – AM96B-Q2735-126v **Convex cup** (Fig. 188e)
Provenience: s. 2735. Rim diameter 100mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body. Yellow/green. Mid third – beginning of fifth century.

97 – AM95B-Q2537-45v **Convex cup** (Fig. 188f)
Provenience: s. 2537. Rim diameter 110mm. "S" profile rim, edge cracked-off and left unworked, convex upper body. Yellow/green. Mid third – beginning fifth century.

98 – AM95B-Q2537-40v **Convex or hemispherical cup** (Fig. 188g)
Provenience: s. 2537 and 2637. Rim diameter 130mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body, thick walls. Pale yellow/green. Third quarter of fourth – beginning of fifth century.

99 – AM95B-Q2537-86v **Convex bowl** (Fig. 189a)
Provenience: s. 2537. Rim diameter 150mm; high 70mm. Complete profile: slightly curved rim, edge cracked-off and left unworked, convex lower body and bottom. Yellow/green. Second half of fourth – fifth century.

100 – AM99B-Q2736-132v **Shallow convex bowl** (Fig. 189b)
Provenience: unknown. Rim diameter 140mm. Curved rim, edge cracked-off and left unworked, wide shallow convex

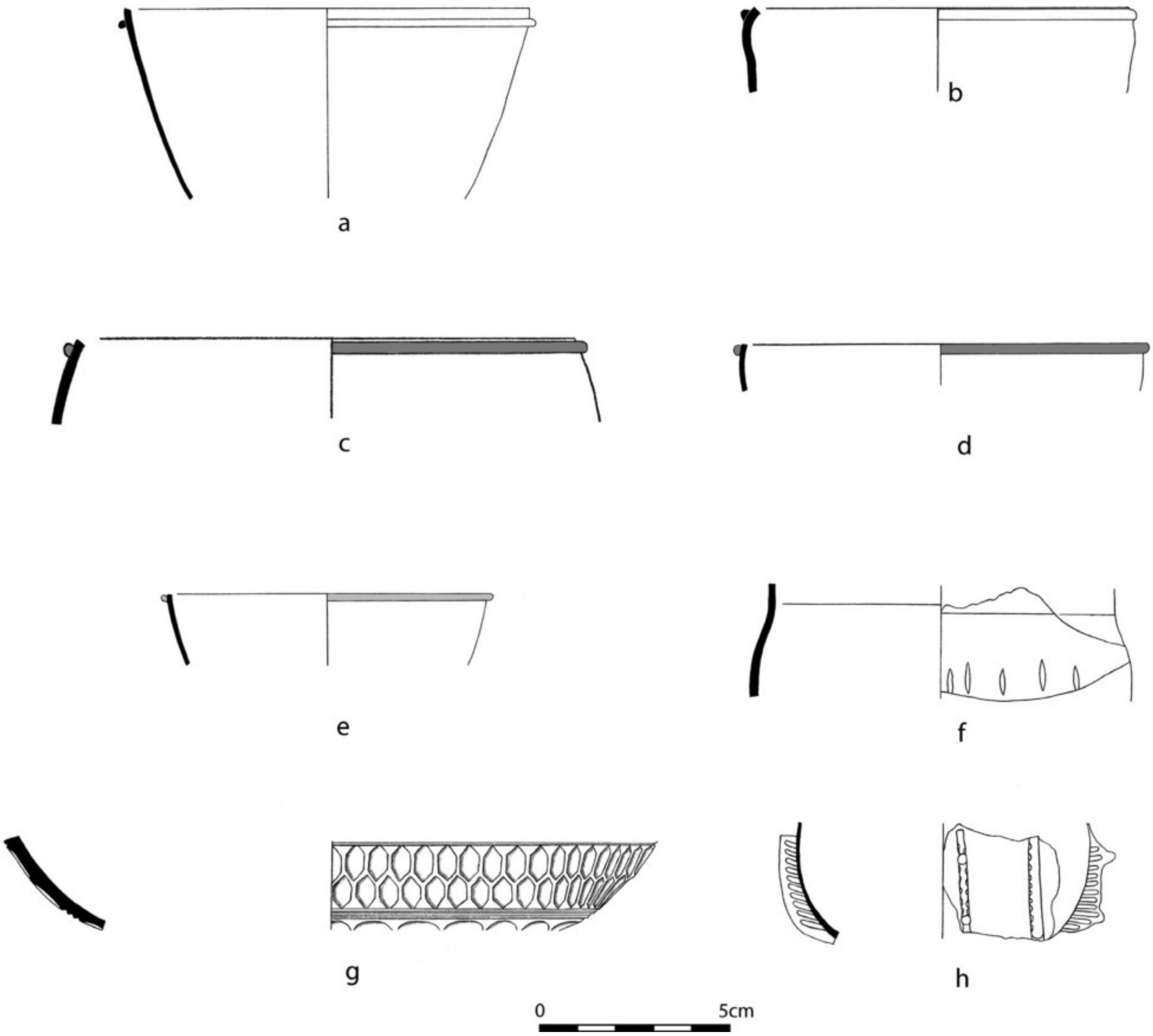

Fig. 190 *Ammaia*, Southern Gate. a) convex bowl with trails no. 104; b) convex bowl with trails no. 105; c) convex bowl with trails no. 106; d) convex bowl with trails no. 107; e) convex bowl with trails no. 108; f) convex bowl with facet-cutting no. 109; g) convex bowl with facet-cutting no. 110; h) convex cup with pinched combs no. 111.

body. Yellow/green. Second half of fourth – fifth century.

101 – AM95B-Q2537-63v **Shallow convex bowl** (Fig. 189c)
Nº I --- Provenience: s. 2537. Rim diameter 110mm. Curved rim, edge cracked-off and left unworked, wide shallow convex body. Pale yellow/green. Second half of fourth – fifth century.

102 – AM96B-Q2735-119v **Shallow convex bowl** with indents (Fig. 189d)
Provenience: s. 2735. Rim diameter 146mm. Slightly curved rim, edge cracked-off and left unworked, wide shallow convex body with vertical indents. Horizontal bands of wheal-cut lines on the rim. Yellow/green. Second half of fourth – fifth century.

103 – AM96B-Q2338-100v **Shallow convex bowl/plate** (Fig. 189e)
Provenience: s. 2338. Rim diameter 200mm. Slightly curved rim, edge cracked-off and left unworked, wide shallow convex body. Horizontal bands of wheal-cut lines on the rim and on the body. Yellow/green. Second half of fourth– fifth century.

104 – AM01B-Q2734-190v **Convex bowl with trails** (Fig. 190a)
Provenience: s. 2734. Rim diameter 110mm. “C” profile rim, edge cracked-off and left unworked, convex body. One horizontal trail on the rim. Colourless. Second half of third–beginning fifth century.

105 – AM96B-Q2735-123v **Convex bowl with trails** (Fig. 190b)
Provenience: s. 2735. Rim diameter 104mm. “S” profile in turned rim, edge cracked-off and left unworked, straight upper body. One horizontal trail on the rim. Pale blue/green. Second half third – beginning fifth century.

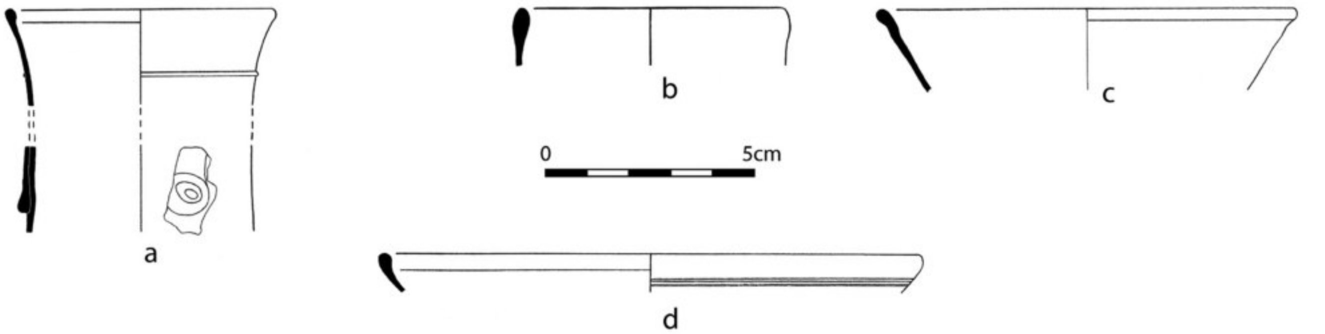

Fig. 191 *Ammaia*, Southern Gate. a) goblet/beaker with applied decoration no. 138; b) cylindrical cup or beaker no. 139; c) cylindrical cup or beaker no. 140; d) shallow campanulate bowl no. 141.

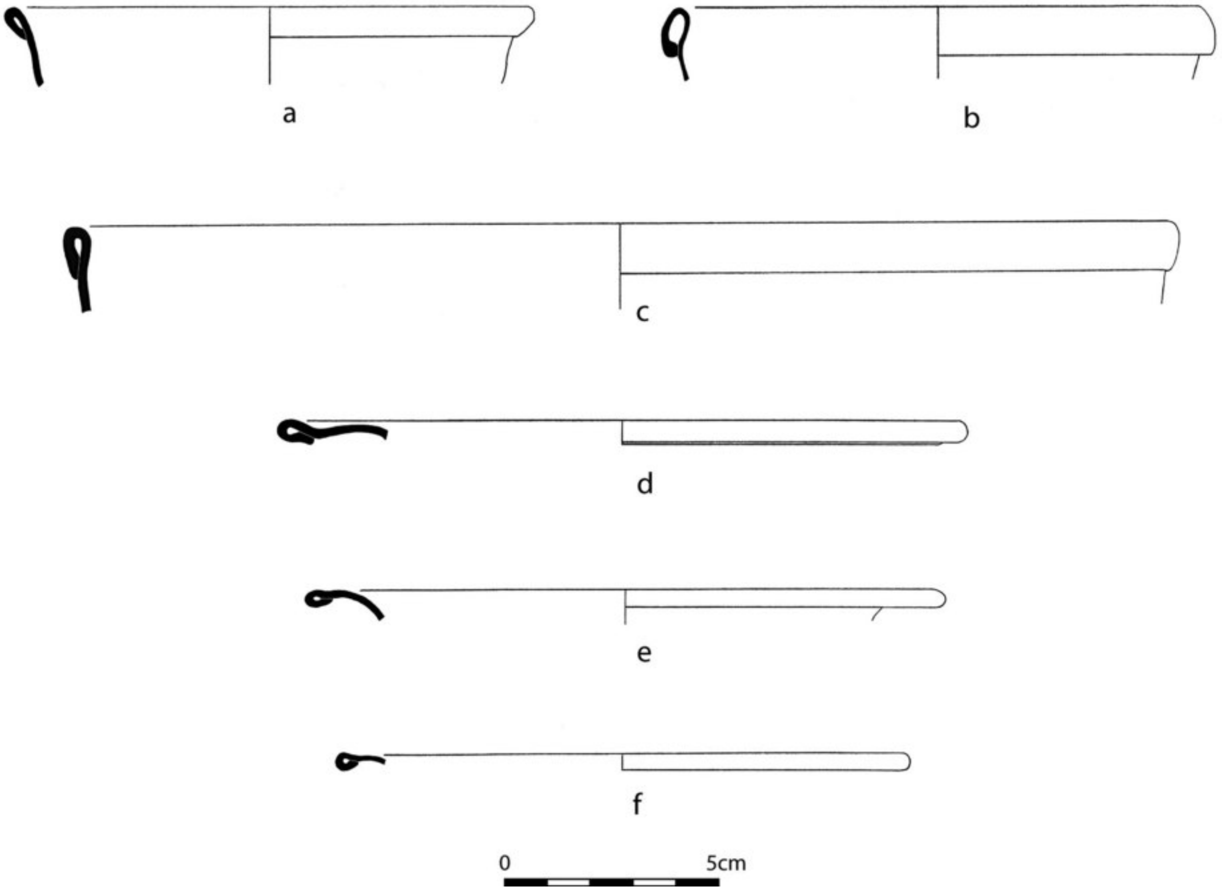

Fig. 192 *Ammaia*, Southern Gate. a) tubular rimmed bowl no. 142; b) tubular rimmed bowl no. 143; c) tubular rimmed bowl or plate no. 144; d) bowl with out-splayed tubular rim no. 145; e) bowl with out-splayed tubular rim no. 146; f) bowl with out-splayed tubular rim no. 147.

106 – AM96B-Q2635-116v **Convex bowl with trails** (Fig. 190c)
Provenience: s. 2635. Rim diameter 64mm. "C" profile in turned rim, edge cracked-off and left unworked, convex upper body. One horizontal opaque white trail on the rim. Yellow/green with opaque white trail. Second half third – beginning fifth century.

107 – AM03B-Q[---]-207v **Convex bowl with trails** (Fig. 190d)
Provenience: s. unknown. Rim diameter 110mm. "C" profile in turned rim, edge cracked-off and left unworked, convex upper body. One horizontal translucent dark blue trail on the rim. Greenish colourless with translucent dark blue trail. Second half third – beginning fifth century.

108 – AM95B-Q2537-49v **Convex bowl with trails** (Fig. 190e)
Provenience: s. 2537. Rim diameter 88mm. "C" profile rim, edge cracked-off and left unworked, convex upper body.

One horizontal opaque white trail on the rim. Greenish colourless with opaque white trail. Second half third – beginning fifth century.

109 – AM01B-Q2734-189v **Convex bowl with facet-cutting** (Fig. 190f)
Provenience: s. 2734. Body diameter *c.* 100mm. Fragment of convex upper body with slight constriction on the shoulder. Irregular row of "rice-grain" facets. Colourless. End second – third century.

110 – AM95B-Q2438-24v **Convex bowl with facet-cutting** (Fig. 190g)
Provenience: s. 2438. Fragment of convex lower body, thick walled. Band of honeycomb facet cutting (two rows of facets) between horizontal wheal-cut lines and followed by a band of circular facets. Colourless. End second – third century.

111 – AM96B-Q2735-120v **Convex cup with pinched combs** (Fig. 190h)
Provenience: s. 2438. Body diameter *c.* 72mm. Fragment of convex body. Two vertical pinched ribbed combs, one of them with two nipples. Colourless. Second half second – third quarter third century.

112 – AM96B-Q2634-111v **Conical plain cup**
Provenience: s. 2634. Rim diameter 100mm. Slightly curved rim, edge cracked-off and left unworked, conical upper body and a fragment of flat base. Yellow/green.

113 – AM-96B-Q2633-106v **Conical plain cup**
Provenience: s. 2633. Rim diameter 85mm. Curved rim, edge cracked-off and left unworked, conical upper body. Pale blue/green.

114 – AM95B-Q2637-96v **Conical plain cup**
Provenience: s. 2637. Rim diameter 110mm. Slightly curved rim, edge cracked-off and left unworked, conical upper body. Pale yellow/green.

115 – AM95B-Q2537-90v **Conical plain cup**
Provenience: s. 2537. Rim diameter 70mm. Slightly curved rim, edge cracked-off and lightly smoothed, conical upper body. Pale yellow/green.

116 – AM95B-Q2537-48v **Cup with applied blobs**
Provenience: s. 2537. Fragment of body with part of a circular blob. Yellow/green with a translucent dark blue blob.

117 – AM01B-Q2633-158v **Cup with applied blobs**
Provenience: s. 2633. Two small fragments of body with blobs. Pale yellow/green with translucent dark green blobs.

118 – AM99B-Q2634-140v **Convex cup**
Provenience: s. 2634. Rim diameter *c.* 110mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body. Yellow/green.

119 – AM99B-Q2634-142v **Convex cup**
Provenience: s. 2634. Rim diameter *c.* 100mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body with tooling marks. Yellowish brown.

120 – AM99B-Q2634-145v **Convex cup**
Provenience: s. 2634. Rim diameter 110mm.
Slightly curved rim, edge cracked-off and left unworked, convex upper body. Horizontal band of tooling lines on the rim. Pale yellow/green.

121 – AM95B-Q2233-14v **Convex cup**
Provenience: s. 2233. Rim diameter 120mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body. Yellow/green.

122 – AM95B-Q2537-37v **Convex cup**
Provenience: s. 2537. Rim diameter 120mm. Slightly curved rim, edge cracked-off and left unworked, convex upper body. Thin walled. Pale yellow/green.

123 – AM96B-Q2736-129v **Convex cup**
Provenience: s. 2736. Rim diameter 110mm.Slightly curved rim, edge cracked-off and left unworked, convex upper body. Dark yellow/green.

124 – AM99B-Q2735-149v **Shallow convex bowl**
Provenience: s. 2735. Rim diameter *c.* 130mm. Slightly curved rim, edge cracked-off and left unworked, shallow convex upper body. Yellow/green.

125 – AM01B-Q2633-157v **Shallow convex bowl**
Provenience: s. 2633. Rim diameter 130mm. Slightly curved rim, edge cracked-off and left unworked, shallow convex upper body. Pale yellow/green.

126 – AM01B-Q2633-156v **Shallow convex bowl**
Provenience: s. 2633. Rim diameter *c.* 120mm. Slightly curved rim, edge cracked-off and left unworked, shallow convex upper body. Horizontal bands of tooling lines on rim body. Greenish colourless.

127 – AM95B-Q2537-46v **Shallow convex bowl**
Provenience: s. 2537. Rim diameter 150mm. Slightly curved rim, edge cracked-off and left unworked, shallow convex upper body. Thick walls. Greenish yellow.

128 – AM95B-Q2537-47v **Shallow convex bowl**
Provenience: s. 2537. Rim diameter 140mm. Very slightly curved rim, almost straight, edge cracked-off and left unworked, shallow convex upper body. Thick walls. Yellow green.

129 – AM95B-Q2537-62v **Shallow convex bowl**
Provenience: s. 2537. Very slightly curved rim, edge cracked-off and left unworked, shallow convex upper body. Yellow green.

130 – AM01B-Q2634-163v **Convex bowl with trails**
Provenience: s. 2634. Rim diameter *c.* 150mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim in a contrasting colour. Greenish colourless and translucent dark blue trail.

131 – AM01B-Q2733-182v **Convex bowl with trails**
Provenience: s. 2733. Rim diameter 110mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim. Yellow/green.

132 – AM01B-Q2734-202v **Convex bowl with trails**
Provenience: s. 2734. Rim diameter *c.* 160mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim in a contrasting colour. Yellow/green with opaque white trail.

133 – AM01B-Q2734-203v **Convex bowl with trails**
Provenience: s. 2734. Rim diameter *c.* 160mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim in a contrasting colour. Greenish colourless with translucent dark blue trail.

134 – AM01B-Q2734-199v **Convex bowl with trails**
Provenience: s. 2734. Rim diameter *c.* 170mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim in a contrasting colour. Colourless with opaque white trail.

135 – AM95B-Q2537-87v **Convex bowl with trails**
Provenience: s. 2537. Rim diameter *c.* 140mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim in a contrasting colour. Pale yellow/green with opaque white trail.

136 – AM96B-Q2633-105v **Convex bowl with trails**
Provenience: s. 2633. Rim diameter 120mm. "C" profile rim, edge cracked-off and left unworked. One horizontal trail on the rim. Pale blue/green with.

137 – AM01B-Q2633-161v **Shallow convex bowl**
Provenience: s. 2633. Rim diameter 180mm. Curved rim (S profile), edge cracked-off and left unworked, very shallow upper body. Pale yellow/green with.

138 – AM01B-Q2734-198v **Goblet/beaker with applied decoration** (Fig. 191a)
Provenience: s. 2734. Rim diameter 62mm. Fire-rounded rim with internal thickening, cylindrical or conical body. Horizontal self-coloured trail below the rim and a sort of waved blob on the body. Greenish colourless. Second half second – beginning third century.

139 – AM99B-Q2633-136v **Cylindrical cup or beaker** (Fig. 191b)
Provenience: s. 2633. Rim diameter *c.* 100mm. Thick fire-rounded rim, vertical. Blue/green. Third quarter second – mid third century.

140 – AM95B-Q2438-25v **Cylindrical cup or beaker** (Fig. 191c)
Provenience: s. 2438. Rim diameter 100mm. Fire-rounded rim with external thickening, conical upper body. Yellowish green. End of second – third century.

141 – AM96B-Q2633-107v **Shallow campanulate bowl** (Fig. 191d)
Provenience: s. 2633). Rim diameter 100mm. Fire-rounded rim with internal thickening, conical upper body. Thin opaque white trails applied below the rim and marvered. Pale yellow/green. Fifth century.

142 – AM96B-Q2635-114v **Tubular rimmed bowl** (Fig. 192a)
Provenience: s. 2635. Rim diameter 134mm. External tubular rim, curved upper body. Pale yellow/green. second half fourth century.

143 – AM01B-Q2735-205v **Tubular rimmed bowl** (Fig. 192b)
Provenience: s. 2735. Rim diameter 130mm. Thick external tubular rim, curved upper body. Pale yellow/green. Second half fourth century.

144 – AM95B-Q2537-73v **Tubular rimmed bowl or plate** (Fig. 192c)
Provenience: s. 2537. Rim diameter 260mm. External tubular rim. Dark yellow/green. Second half fourth century.

145 – AM95B-Q2537-72v **Bowl with out-splayed tubular rim** (Fig. 192d)
Provenience: s. 2537. Rim diameter 162mm. External tubular rim horizontally out-splayed. Yellow/green. Second half fourth century – mid fifth century.

146 – AM95B-Q[---]-5v **Bowl with tubular rim** (Fig. 192e)
Provenience: unknown. Rim diameter 150mm. External tubular rim out-splayed in a curve. Yellow/green. Second half fourth century – mid fifth century.

147 – AM95B-Q2537-85v **Bowl with tubular rim** (Fig. 192f)
Provenience: s. 2537. Rim diameter 134mm. External tubular rim horizontally out-splayed. Pale yellow/green. Second half fourth century – mid fifth century.

148 – AM01B-Q2733-174v **Tubular rimmed bowl**
Provenience: s. 2733. Rim diameter *c.* 150mm. External tubular rim slightly out turned. Blue/green.

149 – AM95B-Q2537-89v **Tubular rimmed bowl**
Provenience: s. 2537. Rim diameter 120mm. External tubular rim, curved upper body. Pale yellow/green.

150 – AM01B-Q2734-187v **Bowl with tubular rim**
Provenience: s. 2734. Rim diameter *c.* 180mm. External tubular rim horizontally out-splayed. Pale yellow/green.

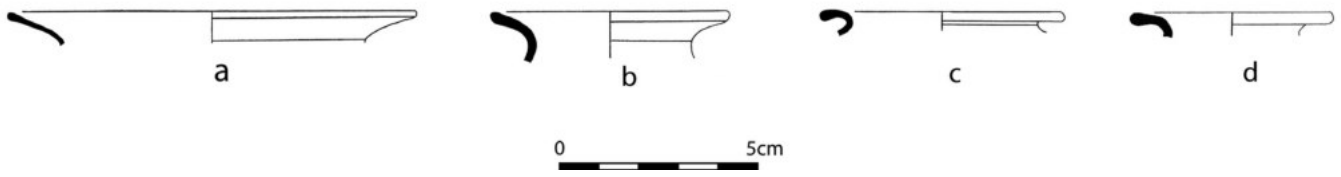

Fig. 193 *Ammaia*, Southern Gate. a) jar with out-turned fire-rounded rim no. 155; b) jar with out-turned fire-rounded rim no. 156; c) jar with out-turned fire-rounded rim no. 157; d) jar with out-turned fire-rounded rim no. 158.

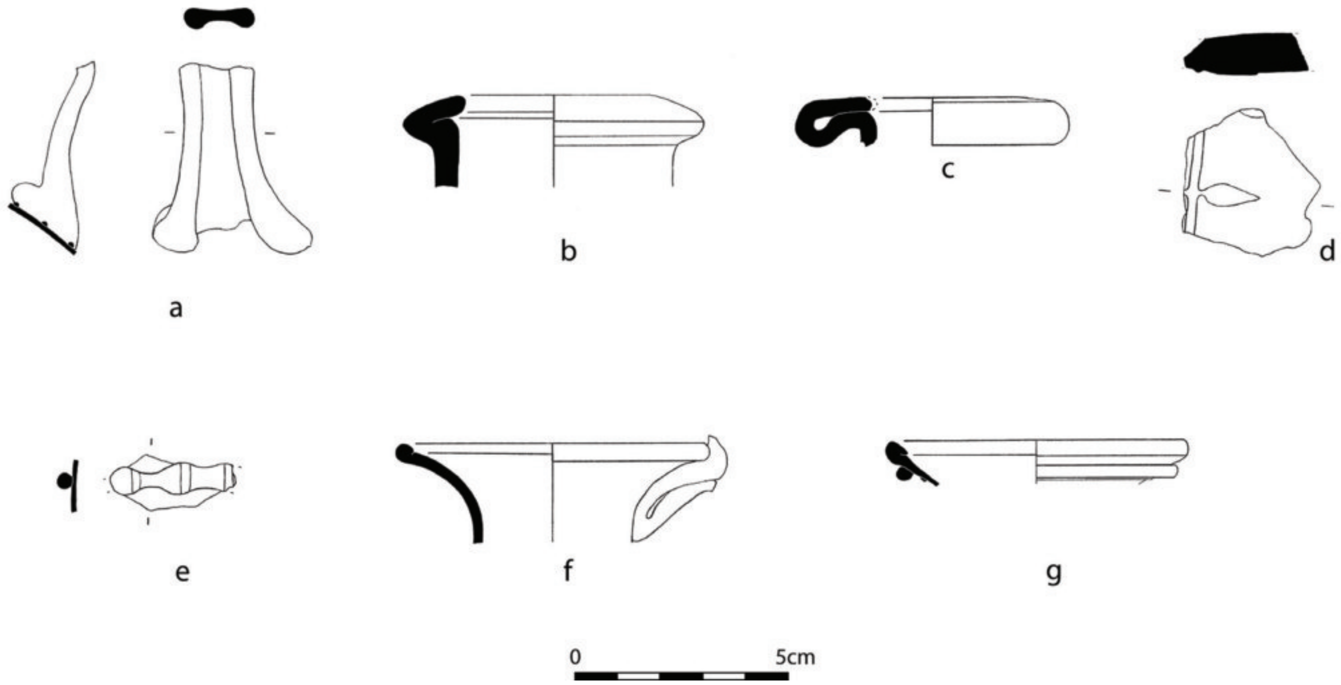

Fig. 194 *Ammaia*, Southern Gate. a) bulbous jug no. 160; b) bottle no. 161; c) bottle no. 162; d) square bottle no. 163; e) bottle or jug with applied decoration no. 164; f) bottle/jug with funnel mouth no. 165; g) bottle/jug with funnel mouth no. 166.

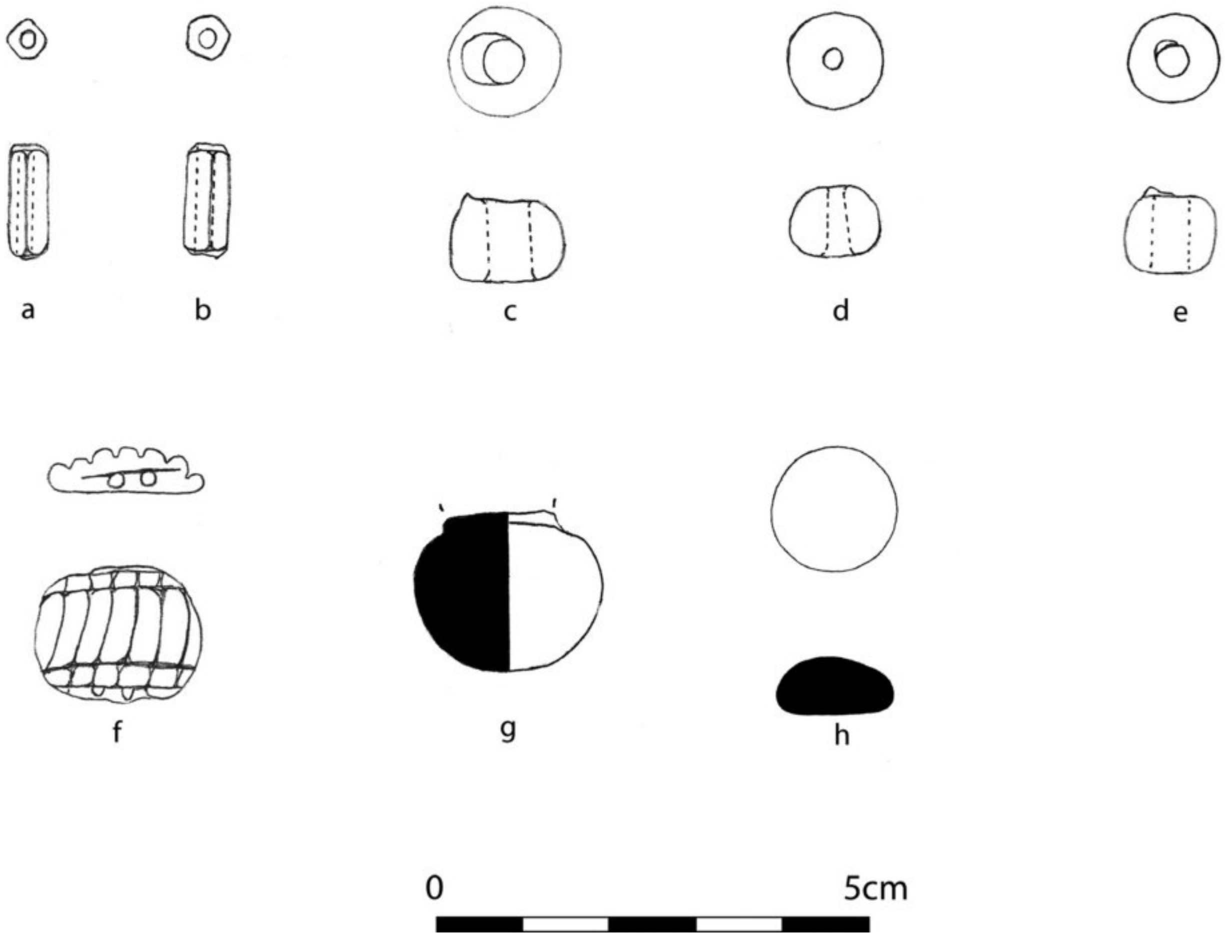

Fig. 195 *Ammaia*, Southern Gate. a) bead no. 172; b) bead no. 173; c) bead no. 174; d) bead no. 175; e) bead no. 176; f) flat square bead no. 177; g) pendant no. 178; h) gemstone no. 179.

151 – AM01B-Q2734-192v **Bowl with tubular rim**
Provenience: s. 2734. Rim diameter *c*. 170mm. External tubular rim horizontally out-splayed. Yellow/green.
152 – AM01B-Q2734-195v **Bowl with tubular rim**
Provenience: s. 2734. Rim diameter *c*. 140mm. External tubular rim horizontally out-splayed. Pale blue/green.
153 – AM01B-Q2733-180v **Bowl with tubular rim**
Provenience: s. 2733. Rim diameter *c*. 170mm. External tubular rim horizontally out-splayed. Yellow/green.
154 – AM95B-Q2537-50v **Bowl with tubular rim**
Provenience: s. 2537. Rim diameter *c*. 190mm. External tubular rim obliquely out-splayed. Yellow/green.
155 – AM01B-Q2635-165v **Jar with fire-rounded rim** (Fig. 193a)
Provenience: s. 2635. Rim diameter 104mm. Fire-rounded rim obliquely out-turned, wide neck. Pale yellow/green. Second – fifth century.
156 – AM95B-Q2436-20v **Jar with fire-rounded rim** (Fig. 193b)
Provenience: s. 2436. Rim diameter 60mm. Fire-rounded rim obliquely out-turned. Yellow/green. Fourth – fifth century.
157 – AM01B-Q2733-178v **Jar with fire-rounded rim** (Fig. 193c)
Provenience: s. 2733. Rim diameter 52mm. Fire-rounded rim horizontally out-turned. Blue/green. Second – fourth century.
158 – AM01B-Q2734-197v **Jar with fire-rounded rim** (Fig. 193c)
Provenience: s. 2734. Rim diameter 52mm. Fire-rounded rim horizontally out-turned. Blue/green. Second – fourth century.
159 – AM95B-Q2436-21v **Jar with fire-rounded rim**
Provenience: s. 2436. Rim diameter 90mm. Fire-rounded rim obliquely out-turned. Yellow/green.
160 – AM02B-Q2734-206v **Bulbous jug** (Fig. 194a)
Provenience: s. 2734. Handle with edge ribs attached to a round fragment of body decorated with thin self-coloured trails. Yellow/green. End of first – 1st half of second century.
161 – AM99B-Q2633-137v **Bottle** (Fig. 194b)
Provenience: s. 2633. Rim diameter 70mm. Folded rim with diagonal profile. Blue/green. First – third century.
162 – AM95B-Q[---]-3v **Bottle** (Fig. 194c)
Provenience: unknown. Rim diameter 70mm. Folded rim with horizontal profile. Blue/green. First – third century.
163 – AM01B-Q2633-162v **Square bottle** (Fig. 194d)
Provenience: s. 2633. Fragment of flat base with mark showing part of a branch. Blue/green. First – third century.
164 – AM95B-Q2537-60v **Bottle or jug with applied decoration** (Fig. 194e)
Provenience: s. 2537. Rim diameter 70mm. Body fragment with trail flattened at regular. Blue/green. Roman.
165 – AM01B-Q2733-181v **Bottle/jug with funnel mouth** (Fig. 194f)
Provenience: s. 2733. Rim diameter 74mm. Rim edge rolled-in, funnel mouth, ribbon handle with ribs attached below rim. Yellow/green. Fourth – fifth century.
166 – AM95B-Q2537-82v **Bottle/jug with funnel mouth** (Fig. 194g)
Provenience: s. 2537. Rim diameter 70mm. Rim edge rolled-in, funnel mouth, spiral trail applied below rim. Pale yellow/green. Fourth century.
167 – AM99B-Q2634-139v **Bottle**
Provenience: s. 2634. One fragment of thick ribbed handle. Blue/green.
168 – AM99B-Q2634-144v **Bottle**
Provenience: s. 2634. Two fragments of thick ribbed handle. Blue/green.
169 – AM01B-Q2734-191v **Bottle**
Provenience: s. 2734. Rim diameter 70mm. Folded rim with horizontal profile. Blue/green.
170 – AM01B-Q2733-172v **Square bottle**
Provenience: s. 2733. Body base fragments with unknown mark. Pale yellow/green.
171 – AM01B-Q2733-173v **Square bottle (?)**
Provenience: s. 2733. Thick base, slightly concave with blow pipe mark. Blue/green.

Glass adornments

172 – AM01B-Q2734-183v **Bead** (Fig. 195a)
Provenience: s. 2734. Width 4mm, length 12mm. Entire hexagonal cylinder bead. Green (Pantone 340-A). Roman.
173 – AM95B-Q2537-68v **Bead** (Fig. 195b)
Provenience: s. 2537. Width 5mm, length 12mm. Entire hexagonal cylinder bead. Blue/green. Roman.
174 – AM01B-Q2733-177v **Bead** (Fig. 195c)
Provenience: s. 2733. Width 13mm, length 9mm.Entire spherical plain bead. Worn. Dark blue. Roman.
175 – AM95B-Q2337-15v **Bead** (Fig. 195d)
Provenience: s. 2337. Width 11mm, length 8mm. Entire spherical plain bead. Opaque black. Second half fourth – fifth century.
176 – AM01B-Q2734-204v **Bead** (Fig. 195e)
Provenience: s. 2734. Width 10mm, length 9mm. Entire spherical plain bead. Opaque black. Second half fourth – fifth century.
177 – AM01B-Q2733-176v **Flat square bead** (Fig. 195f)
Provenience: s. 2733. Width 19mm, length 15mm, thick 6mm. Entire flat square bead with two holes. One surface plain and the other decorated with 6 grooves in one sense and 2 perpendicular. Worn. Opaque black. Second half fourth – fifth century.
178 – AM95B-Q2537-76v **Pendant** (Fig. 195g)
Provenience: s. 2537. Width 21mm, length 18mm. Spherical solid pendant with broken loop. Dark green, almost black. Second half fourth – fifth century.

179 – AM95B-Q2434-16v **Gemstone (?)** (Fig. 195h)
Provenience: s. 2434. Width 14mm, thick 7mm. Gemstone or gamming counter, round and plain. Opaque black. Second half fourth – fifth century.

180 – AM95B-Q2537-88v **Bracelet** (Fig. 196a)
Provenience: s. 2537. Diameter 70mm, section 13x6mm. Fragment of plain bracelet with intense wear. Opaque black. Second half fourth – fifth century.

181 – AM96B-Q2338-98v **Bracelet** (Fig. 196b)
Provenience: s. 2338. Diameter 100mm, section 10 by 5mm. Fragment of plain bracelet. Opaque black. Second half fourth – fifth century.

182 – AM01B-Q2734-194v **Bracelet** (Fig. 196c)
Provenience: s. 2734. Diameter *c.* 80mm, section 16 by 7mm. Fragment of thick and plain bracelet. Opaque black. Second half fourth – fifth century.

183 – AM95B-Q[---]-6v **Bracelet** (Fig. 196d)
Provenience: unknown. Diameter unknown, section 14 by 5mm. Small fragment of plain and thick bracelet. Opaque black. Second half fourth – fifth century.

184 – AM95B-Q2537-69v **Bracelet** (Fig. 196e)
Provenience: s. 2537. Diameter c. 100mm, section 9x7mm. Small fragment of plain and thin bracelet. Opaque black. Second half fourth – fifth century.

185 – AM01B-Q2635-169v **Bracelet** (Fig. 197a)
Provenience: s. 2635. Diameter 70mm, section 9 by 4mm. Fragment of grooved bracelet with tight vertical grooves. Opaque black. Second half fourth – fifth century.

186 – AM95B-Q[---]-8v **Bracelet** (Fig. 197b)
Provenience: unknown. Diameter 60mm, section 8 by 4mm. Fragment of grooved bracelet with tight vertical grooves. Opaque black. Second half fourth – fifth century.

187 – AM01B-Q2734-185v **Bracelet** (Fig. 197c)
Provenience: s. 2734. Diameter 76mm, section 7 by 5mm. Fragment of grooved bracelet with vertical grooves, irregular and slightly creased. Opaque black. Second half fourth – fifth century.

188 – AM96B-Q2537-104v **Bracelet** (Fig. 197d)
Provenience: s. 2537. Diameter 83mm, section 9 by 3mm. Fragment of grooved bracelet with spaced vertical grooves and intense wear. Opaque black. Second half fourth – fifth century.

189 – AM99B-Q2633-135v **Bracelet** (Fig. 197e)
Provenience: s. 2633. Diameter 100mm, section 10 by 6mm. Fragment of grooved bracelet with two spaced oblique grooves, intense wear. Opaque black. Second half fourth – fifth century.

190 – AM95B-Q[---]-7v **Bracelet** (Fig. 197f)
Provenience: unknown. Diameter unknown, section 11 by 5mm. Fragment of grooved bracelet with tight oblique

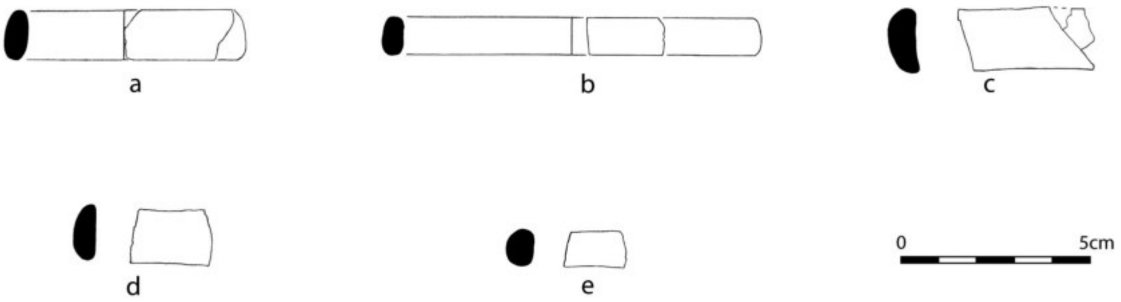

Fig. 196 *Ammaia*, Southern Gate. a) bracelet no. 180; b) bracelet no. 181; c) bracelet no. 182; d) bracelet no. 183; e) bracelet no. 184.

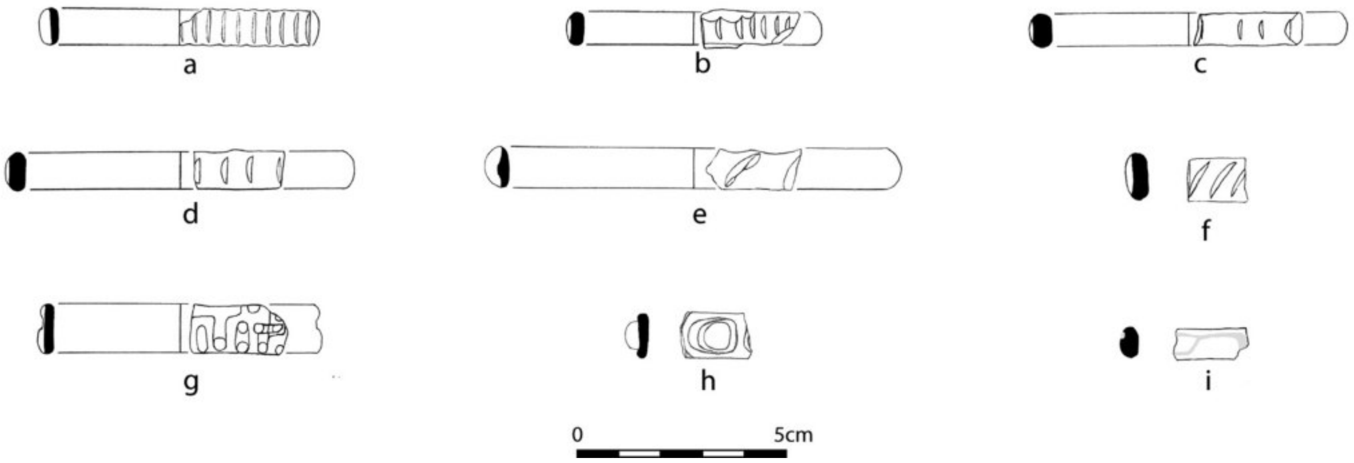

Fig. 197 *Ammaia*, Southern Gate. a) bracelet no. 185; b) bracelet no. 186; c) bracelet no. 187; d) bracelet no. 188; e) bracelet no. 189; f) bracelet no. 190; g) bracelet no. 191; h) bracelet no. 192; i) bracelet no. 193.

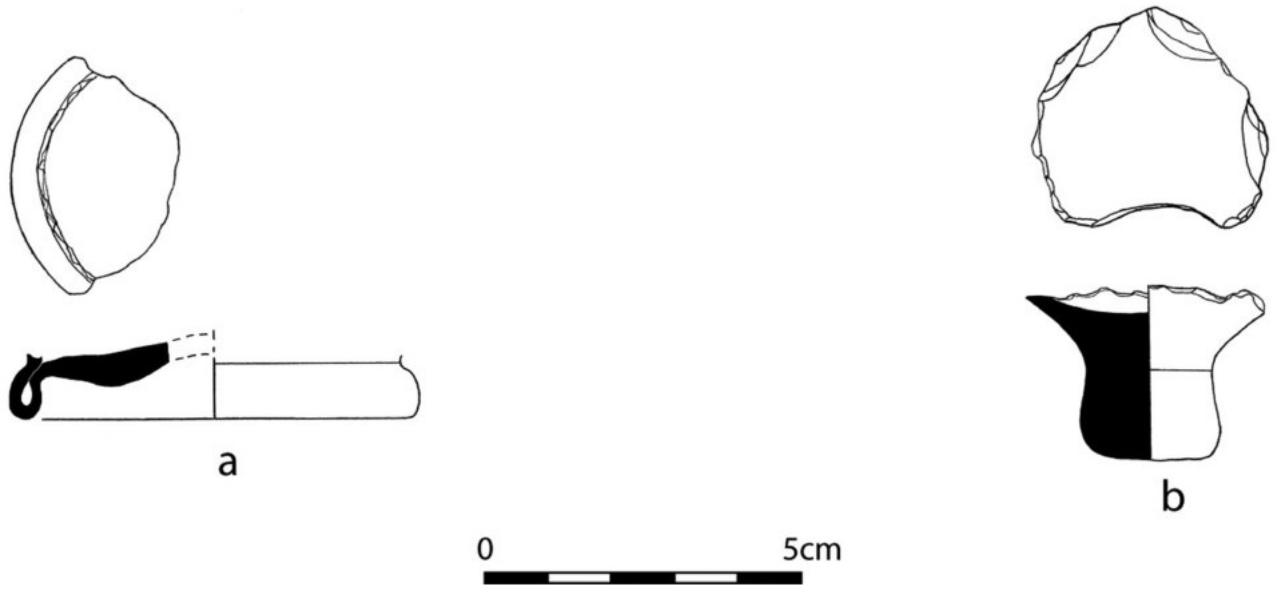

Fig. 198 *Ammaia*, Southern Gate. a) improvised gamming counter (?) no. 201; b) improvised gamming counter (?) no. 202.

grooves. Opaque black. Second half fourth – fifth century.

191 – AM95B-Q2436-17v **Bracelet** (Fig. 197g)
Provenience: s. 2436. Diameter 66, section 12 by 4mm. Fragment of stamped bracelet, a sort of grid of points, sometimes connected. Opaque black. Second half fourth – fifth century.

192 – AM96B-Q2634-109v **Bracelet** (Fig. 197h)
Provenience: s. 2634. Diameter unknown, section 11 by 6mm. Fragment of stamped bracelet, a sort of relief ovals. Opaque black. Second half fourth – fifth century.

193 – AM95B-Q2537-67v **Bracelet** (Fig. 197i)
Provenience: s. 2537. Diameter *c.* 100mm, section 11 by 6mm. Fragment of thin bracelet with waved trail in a contrasting coloured, much altered and eroded, perhaps white. Opaque black. Second half fourth – fifth century.

194 – AM01B-Q2734-186v **Bracelet**
Provenience: s. 2734. Fragment of plain bracelet. Opaque black.

195 – AM01B-Q2635-171v **Bracelet**
Provenience: s. 2635. Diameter unknown, section 15 by 6mm. Fragment of plain thick bracelet with intense wear. Opaque black.

196 – AM01B-Q2734-201v **Bracelet**
Provenience: s. 2734. Diameter unknown, section 12 by 4mm. Fragment of plain bracelet with irregular thickness. Opaque black.

197 – AM95B-Q2537-70v **Bracelet**
Provenience: s. 2537. Diameter *c.* 100mm, section 14 by 5mm. Fragment of plain flattened bracelet with intense wear. Opaque black.

198 – AM96B-Q2634-108v **Bracelet**
Provenience: s. 2634. Diameter *c.* 70mm, section 16 by 6mm. Fragment of plain bracelet. Opaque black.

199 – AM96B-Q2735-118v **Bracelet**
Provenience: s. 2735. Diameter *c.* 80mm, section 6 by 9mm. Fragment of plain thin bracelet. Opaque black.

200 – AM01B-Q2635-170v **Bracelet**
Provenience: s. 2635. Section 9 by 5mm. Fragment of grooved bracelet with two vertical grooves. Opaque black.

Reuse and reshape

201 – AM95B-Q2537-71v **Improvised gamming counter (?)** (Fig. 198a)
Provenience: s. 2537. Diameter of base 124mm. Fragment of a base reshaped into an improvised gamming counter by cutting and chipping the wall. Original shape: base with tubular folded foot ring and pontil mark, possibly from a jug. Bluish colourless. Late Roman.

202 – AM95B-Q2437-23v **Improvised gamming counter (?)** (Fig. 198b)
Provenience: s. 2437. Diameter of base 22mm. Base reshaped into an improvised gamming counter by cutting and chipping the wall. Original shape: a “nipple” like base, a solid protuberant base, possibly from a hanging lump type Isings 106b. Blue/green. End fourth – seventh century (the original shape).

III.9 AS MOEDAS

José Ruivo

Para as notas introdutórias, os códigos de bustos e as abreviaturas ver cap. I.8.

Nº	*Busto*	*Reverso*	*Marca*	*Peso*	*Bibliografia*	*Referência*	*Fig.*

a O Alto Império

1. Período 27 a.C. - 68

AUGUSTO/TIBÉRIO
***Caesaraugusta* (?)**
[...]SA[...] ou [...]VS[...] (Asse)

90.	A2	[...] C[C]A (?); tipo indeterminado		8,48	-	PS.B.2733.B.4	

TIBÉRIO
Emerita
14-37
[DIVVS A]VGVSTVS P[ATER] (Dupôndio)

91.	A5e	[PERMI] AVG PROV[IDENT]; Altar		9,68	RPC 34	3586	Fig. 199

GAIO (para M. AGRIPPA)
Roma/cunhagens provinciais
37-41
[M AGRIPPA L F] COS III (Asse)

92.	A6e	[S C]; Neptuno		9,15	RIC I 58	NV.99.303	

Anv.: Ilegível (Asse)

93.	A6e	Fruste		6,92	RIC I 58	2381	

CLÁUDIO I
Cunhagens provinciais
post 41
[TI CLA]VDIVS CAESAR [...] (Asse)

94.	A1e	[LIBERTAS AVGVST]A S C		11,13	cf. RIC I 97	3675 (2)	Fig. 199

TI CLAVDIVS CAESAR AVG P[M TR P IMP] (Asse)

95.	A1e	Minerva. No campo, S C		7,72	cf. RIC I 100	PS.B.2736.1	

[TI CLAVDIVS] CAESAR AVG P M [...](Asse)

96.	A1e	Fruste		12,12	-	3652	

[TI CLAVDIV]S CAESAR AVG [...] (Asse/dupôndio)

97.	A1e	Fruste		7,46	-	NV.01.182	

[TI CLAVDIVS] CAESAR [...], com a contramarca NCAPR (Asse/dupôndio)

98.	A1e	Ilegível; tipo indeterminado		12,12	-	MAMM.0110042	Fig. 199

Anv.: ilegível (Asse/dupôndio)

99.	A1e	Fruste		7,01	-	Torre 00/1	

JÚLIOS-CLÁUDIOS
Casa da moeda indeterminada
Anv.: Ilegível (Sestércio)

100.	A2	Fruste		16,15	-	3987 (1)	

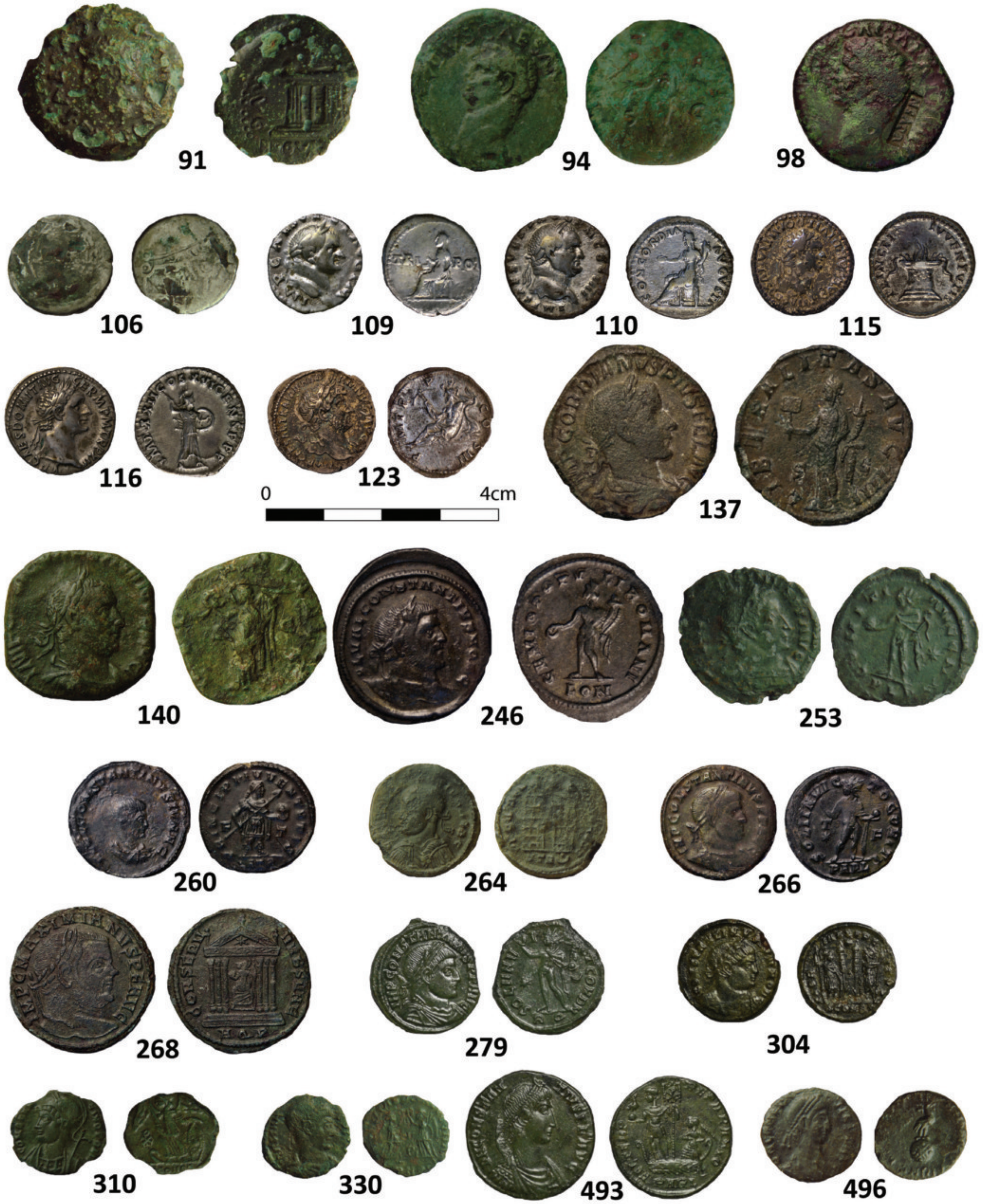

Fig. 199 *Ammaia*, Southern Gate. Coins catalogue nos. 91, 94, 98, 106, 109, 110, 115, 116, 123, 137, 140, 246, 253, 260, 264, 266, 268, 279, 304, 310, 330, 493, 496.

Anv.: Ilegível, com a contramarca NCAPR (Asse)

101.	A1/2e	Fruste		11,36	-	1172

Anv.: Ilegível (Asses/dupôndios)

102.	A2e	Fruste		8,23	-	8248
103.	A?e	Fruste		3,51	-	PS.B.2734.65
104.	A?e	Fruste		7,30	-	3670
105.	A?e	Fruste		10,32	-	3659

2. Período 68-96

GUERRA CIVIL DE 68-69 (?)

Gália (?)

Anv.: Ilegível; coroa (Denário forrado)

106.	-	Ilegível; Águia entre duas insígnias; para a dta. um altar		2,67	-	2503	Fig. 199

GALBA/VESPASIANO (?)

Roma

Anv.: ilegível (Asse)

107.	A2?	[...] S [C]; figura feminina para a esq.		8,80	-	PS.B.2734.45

VITÉLIO

Roma

Final Abril-Dezembro 69

[A VITE]LLI[VS GERM]AN IMP TR P (Denário)

108.	A2	CONCOR – DIA P R, Concordia		3,23	RIC I 73	PS.B.2735.12

VESPASIANO

Roma

Julho-Dezembro 71

IMP CAES VESP AVG P M (Denário)

109.	A2	TRI POT; Vesta sentada para a esq.		2,97	RIC II (1) 46	MAMM.010044	Fig. 199

72-73

IMP CAES VESP AVG P M COS IIII (Denário)

110.	A2	CONCORDIA AVGVSTI; Concordia		2,85	RIC II (1) 357	MAMM.010047	Fig. 199

74

[IMP C]AES VESP AVG P M T P COS V CENS (Dupôndio)

111.	A5e	FELICI[TAS PVB]LICA S C; Felicitas		9,97	RIC II (1) 716	NV.04.123

73-78

[IMP CAES V]ESP A[VG P M T P COS ...] (Dupôndio)

112.	A5e	FELI[CITAS PVBLICA] S [C]		7,70	-	2499

69-79

IMP CAESA]R VES[...] (Denário)

113.	A2	Fruste[1]		1,66	-	3589

VESPASIANO (para TITO)

Roma

73

Anv.: ilegível (Asse)

114.	A2	[S C]; Águia, de asas abertas, sobre globo		8,03	RIC II (1) 634	NV.01.181

TITO (para DOMICIANO)

Roma

80-81

CAESAR DIVI F DOMITIANVS COS VII (Denário)

115.	A2	PRINCEPS IVVENTVTIS; Altar		2,84	RIC II (1) 266	MAMM.010046	Fig. 199

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[1] Reverso totalmente riscado com objeto pontiagudo.

DOMICIANO
Roma
93-94
IMP CAES DOMIT AVG GERM P M TR P XIII (Denário)

116.	A2	IMP XXII COS XVI CENS P P P; Minerva		3,46	RIC II (1) 761	MAMM.010045	Fig. 199

FLÁVIOS (?)
Roma (?)
69-96 (?)
Anv.: Ilegível (Asse/Dupôndio)

117.	A?e	Ilegível; figura feminina para a esq.		6,34	-	2376
118.	A?	Ilegível; tipo indeterminado		4,78	-	PS.B.2734.64
119.	A?	Fruste		6,68	-	Torre/99/1

3. Período 98-192

NERVA
Roma
97
IMP NERVA CAES AVG P M TR P COS III P P (Denário)

120.	A2	LIBERTAS PVBLICA; Libertas		3,03	RIC II 19	MAMM.010048

96-97
[IMP NERVA CAES] AVG [...] (Dupôndio)

121.	A5	LIBERTA[S PV]BLICA S C		9,24	cf. RIC II 65/101	3675 (1)

TRAJANO
Roma
98-117
[IMP CA]ES N[ERVA TRAIANO ...] (Denário)[2]

122.	A4	Ilegível; tipo indeterminado		2,40	-	6503

ADRIANO
Roma
119-128
IMP CAESAR TRAIAN HAD - RIANVS AVG (Denário)

123.	A4	P M TR P COS III; Oceano reclinado para a esq., com âncora		2,83	RIC III 75b	MAMM.010050	Fig. 199

117-138
Anv.: Ilegível (Dupôndio)

124.	A5	Fruste		13,35	-	8235

ANTONINO PIO
Roma
143-144
ANTONINVS AVG PIV[S P P] TR P COS III (Asse)

125.	A2	IMPERATOR I[I] LIBERT S C; Libertas		8,02	RIC III 738	PS.B.2734.62

138-161
Anv.: Ilegível (Sestércio)

126.	A2	[...] S C; figura feminina para a esquerda com cornucópia (...)		22,97	-	PS.B.2735.50

Anv.: Ilegível (Asse)

127.	A2	[...] S C; figura feminina para a esq.		9,30	-	Torre 99/2

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[2] Moeda riscada com objecto pontiagudo.

4. Imperadores e casas da moeda indeterminados (séculos I-II ?)

Anv.: Ilegível (asses/dupôndios)

128.	X	Ilegível; tipo indeterminado		3,71F	-	8275
129.	A?	Fruste		7,54	-	3992
130.	Z	Fruste		5,31	-	6818
131.	Z	Fruste		8,44	-	2419
132.	Z	Fruste		8,34	-	PS.B.2735.57

Anv.: Fruste (asses/dupôndios)

133.	-	Fruste		7,95	-	3676
134.	-	Fruste		7,34	-	4708

Anv.: Fruste (denários forrados)

135.	-	Ilegível; tipo indeterminado		2,04	-	2598
136.	-	Fruste		2,41	-	8277

b. O século III

1. Período 193-260

GORDIANO III
Roma
241-243
IMP GORDIANVS PIVS FEL AVG (Sestércio)

137.	D4	LIBERALITAS AVG IIII S C		14,97	RIC IV (3) 316a	MAMM.010052	Fig. 199

FILIPE I
Roma
244-249
MARCIA OTACIL SEVERA AVG (Sestércio)

138.	F1	PIETAS AVGVSTAE S C		14,49	RIC IV (3) 208a	MAMM.010051

TREBONIANO GALO
Roma
251-253
IMP CAES C VIBIVS TREBONIANVS GALLVS AVG (Sestércio)

139.	D4	PIET[A]S [AVG]G S C		16,60	RIC IV (3) 116a	PS.B.2734.20

VALERIANO
Roma
final do outono 254 -início 256
IMP [C P] LIC VALERIANVS AVG (Sestércio)

140.	D3	VICTO-RIA AVGG S C		15,06	RIC V(1) 177	2527	Fig. 199

2. Período 260-294

GALIENO
Roma
3ª série (263)
GALLIENVS AVG

141.	A5	LAETITIA AVG	- -//-	2,05	cf. RIC V(1) 226	6547

SALONINA AVG

142.	F2	PVDICITIA	- -//-	2,20	RIC V (1) 24	2455

4ª série (264)
GALLIENVS AVG

143.	A5	INDVLGENT AVG	- -//P	1,63	RIC V (1) 205	PS.B.2734.24

SALONINA AVG

144.	F2	PVDICITIA	- -//?	1,48	cf. RIC V(1) 25	4720

5ª série (266)

GALLIENVS AVG

145.	A5	MARTI PACIFERO	A -//-	2,93	RIC V (1) 236	PS.B.2734.31
146.	A5	MARTI PACIFERO	A -//-	1,50	RIC V (1) 236	4416
147.	A5	MARTI PACIFERO	A -//-	2,33	RIC V (1) 236	4403
148.	A5	ABVNDANTIA AVG	- -//-	1,58	cf. RIC V (1) 157	NV.01.176
149.	A5	ABVNDANTIA AVG	? -//-	1,04F	cf. RIC V (1) 157	3584 (3)
150.	A5	VBERITAS AVG	- ε//-	0,97F	cf. RIC V (1) 287	PS.B.2534.2
151.	A5	VBERITAS AVG	- -//-	2,55	cf. RIC V (1) 287	3642

Anv.: Ilegível

152.	A5	Ilegível; tipo *Fortuna Redux*	- S//-[3]	1,21	cf. RIC V (1) 193	PS.B.2634.6

6ª série (267-268)

GALLIENVS AVG

153.	A5	DIANAE CONS AVG; corça para a dta. com cabeça retrógada	- -//?	2,42	cf. RIC V (1) 177	MAMM.010053
154.	D9?	APOLLINI CONS AVG, centauro para a dta.	- -//Z	1,64	cf. RIC V (1) 163	PS.B.2735.37
155.	A5	DIANAE CONS AVG, veado para a esq.	- -//X	2,73	RIC V (1) 179	PS.B.2735.44
156.	A5	DIANAE CONS AVG	- -//XI	2,47	RIC V (1) 181	6558
157.	A5	[...] CONS AVG; animal para a esq.	?	1,77	-	1178 (2)

Anv.: Fruste

158.	-	NEPTVNO CONS AVG; Hipocampo para a dta.	- -//N	1,53	cf. RIC V (1) 245	6530

2ª-6ª séries

GALLIENVS AVG

159.	A5	Ilegível; tipo indeterminado	?	3,03	-	1175 (7)

CLÁUDIO II

Roma

Emissão II (final 268-início 269)

a) sem marca de *officina*

IMP C CLAVDIVS AVG

160.	D9	SALVS [AVG]		2,42	RIC V (1) 98	8267
161.	B2	SPES PV[BLICA]		2,34	RIC V (1) 102	PS.B.2735.53

b) doze *officinae*

IMP C CLAVDIVS AVG

162.	D9	IOVI VICTORI	- -//-	2,98	RIC V (1) 54	PS.B.2634.5
163.	B2	AEQVITAS AVG	- -//-	2,07	RIC V (1) 14	6808
164.	B2	AEQVITAS AVG	- -//-	2,97	RIC V (1) 14	2417
165.	A5	[...]AS AVG , tipo indeterminado	?	2,70	-	PS.B.2733.2

Emissão II-III

IMP [C] CLAVDIVS AVG

166.	A5	AEQVITAS AVG	- -//-	2,27	RIC V (1) 14-15	PS.B.2438.3
167.	B2	AEQVITAS AVG	- -//-	1,94	RIC V (1) 14-15	2422
168.	A5	FIDES EXERCI	- XI//-	1,20F	RIC V (1) 34-36	8261
169.	D8	FIDES EXERCI	- -//-	1,22	RIC V (1) 34-36	PS.B.2733.3
170.	D8	FIDES EXERCI	- -//-	2,61		PS.B.2734.24
171.	A5	LIBERT AVG	- -//-	1,37	RIC V (1) 62-63	3686
172.	B2	Ilegível; *Libertas* para a esq., com ceptro e pileus	- X//-	1,27	RIC V (1) 62-63	PS.B.2734.33 NV.01.157
173.	Z	LIBERT AVG	?//-	0,78F	RIC V (1) 62-63	3664

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[3] S invertido. Imitação?

174.	A5	VIRTVS AVG	- ε//-	2,69	RIC V (1) 109-110	PS.B.2735.52

Emissão III (269)

IMP CLAVDIVS AVG

175.	A5	FELICITAS AVG	- -//-	1,83	cf. RIC V (1) 33	3680
176.	D8	FELICITAS AVG	- -//-	1,43	cf. RIC V (1) 33	PS.B.2734.47
177.	B2	ANNONA AVG	- Δ//-	2,83	RIC V (1) 19	1175 (5)
178.	A5	LIBERT AVG	- -//-	1,43	cf. RIC V (1) 63	3648 (2)
179.	B2	IOVI VICTORI	- -//-	1,41	RIC V (1) 55	2344

Emissão II-IV (final 268-270)

IMP [C] CLAVDIVS AVG

180.	A5	Ilegível; fig. fem. para a esq. com cornucópia e (...?)	?	2,15	-	1178 (1)

Antioquia (?)[4]

IMP [C] CLAVDIVS AVG

181.	A5	VIRTVS AVG (*Virtus* para a dta. com lança e escudo que repousa no solo)	- -//-	1,92	cf. RIC V (1) 225	NV.01.177

DIVO CLAUDIO[5]

Roma/imitações (?)

DIV[O CLAVDI]O

182.	A5	CONSECRATIO, Águia 2		1,78	cf. RIC V (1) 266	PS.B.2734.35

[DI]VO CLAVDI[O]

183.	A5	[CON]SECRAT[IO], Águia 2		1,75	cf. RIC V (1) 266	4742

[DIVO CLAV]DIO

184.	A5	CO[NSECRATI]O, Águia 2		2,00	cf. RIC V (1) 266	PS.B.2735.38

[DIVO] CLAVDIO

185.	A5	Ilegível, Altar 1a		2,02	cf. RIC V (1) 261	PS.B.2735.45

DIVO CL[AVDIO]

186.	A5	[CONSECRA]TIO, Altar 1a		1,91	cf. RIC V (1) 261	3663

D[IVO CLAV]DIO

187.	A5	CONSECRATIO, Altar 1a (?)		2,18	cf. RIC V (1) 261	8246

DIVO CLAV[DIO]

188.	B2	CONS[ECR]ATIO, Altar 1b		1,13	cf. RIC V (1) 261	PS.B.2734.14

Imitações

[DIV]O CL[AVDIO]

189.	A5	[CON]SECRATI[O], Águia 2		1,92	cf. RIC V (1) 266	4719 (2)

[DIVO C]LAVD[IO]

190.	A5	[CONSECR]ATIO, Águia 2		1,42	cf. RIC V (1) 266	2622

[DIV]O CL[AVDIO]

191.	A5	[CONSECRA]TIO, Águia 2		1,12	cf. RIC V (1) 266	3641

Anv.: Ilegível

192.	A5	Ilegível, Águia 2		0,67F	cf. RIC V (1) 266	NV.01.175

DIVO CLAVDIO

193.	A5	CONS]E[CRATIO], Águia 2		1,37	cf. RIC V (1) 266	PS.B.2734.56

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[4] O tratamento do busto deixa-nos sérias dúvidas quanto à autenticidade da peça.

[5] Os códigos utilizados para os reversos dos *Divo Claudio* são os seguintes:
Águia 1: águia de pé, para a direita, cabeça voltada para a esquerda;
Águia 2: águia de pé, para a esquerda, cabeça voltada para a direita;
Altar 1a: altar flamejante dividido em quatro secções;
Altar 1b: altar flamejante com grinalda.

[DIVO CLAVD]IO

194.	A5	CONSE[CRATIO], Águia 2		1,09	cf. RIC V (1) 266	PS.B.2735.1

[DIVO C]LAV[DIO]

195.	A5	[C]ONSECR[ATIO], Águia 2		1,31	cf. RIC V (1) 266	2574

[DIVO CLAV]DIO

196.	A5	[CONSECRA]TIO, Águia 2		1,03	cf. RIC V (1) 266	2594

Anv.: Ilegível

197.	A5	CO[NSECRATIO], Águia 2		0,41	cf. RIC V (1) 266	XLII

Anv.: Ilegível

198.	A5	CONS]ECRAT[IO], Águia 2		1,56	cf. RIC V (1) 266	6534

Anv.: Ilegível

199.	A5	CO[NSECRATIO], Águia 2		1,39	f. RIC V (1) 266	PS.B.2734.46

[D]IVO CLAVDIO

200.	A5	[CON]SE[CRATIO], Águia 1/2		0,84	cf. RIC V (1) 266	PS.B.2734.18

[DI]VO [CLAVDIO]

201.	A5	CONSECR[ATIO], Altar 1a		1,25	cf. RIC V (1) 261	NV.01.168

[DIVO] CLAVDIO

202.	A5	[CONSEC]RATIO, Altar 1a		1,66	cf. RIC V (1) 261	6577

[DIVO C]LAVDIO

203.	A5	CONS[ECRATIO], Altar 1a		1,36	cf. RIC V (1) 261	2523

Anv.: Ilegível

204.	A5	[CONSECRA]TIO, Altar 1a		1,40	cf. RIC V (1) 261	2337
205.	A5	Ilegível, Altar 1a		1,24F	cf. RIC V (1) 261	2347

[DIV]O CLAVD[IO]

206.	A5	Ilegível, Altar 1a		0,68	cf. RIC V (1) 261	PS.B.2635.1

[DI]VO CLAV[DIO]

207.	A5	CONS[ECRATIO], Altar 1a		1,40	cf. RIC V (1) 261	P S.B.2734.22

Anv.: Ilegível

208.	A5	CO[NSECRATIO], Altar 1a		1,41F	cf. RIC V (1) 261	"IV"

DIVO [CLAVDIO]

209.	A5	[CONSECR]ATIO, Altar 1b		1,01	cf. RIC V (1) 261	NV.01.179

[DIVO] CLAVDIO

210.	A5	[CON]SECRATIO, Altar 1b		0,98	cf. RIC V (1) 261	1178 (3)

[D]IVO CLAV[DIO]

211.	A5	CON[SECRATIO], Altar 1b		1,40	cf. RIC V (1) 261	2604

[DIV]O [CLAVDIO]

212.	A5	CO[NSECRATIO], Altar 1b		1,44	cf. RIC V (1) 261	4718 (2)

[DIVO CL]AVDI[O]

213.	A5	CONSE[CRATIO], Altar 1b		1,92	cf. RIC V (1) 261	PS.B.2734.48

[D]IVO CL[AVDIO]

214.	A5	[CONS]ECRATI[O], Altar 1b		1,91	cf. RIC V (1) 261	NV.01.142[a]

Anv.: Ilegível

215.	A5	[CO]NSACRA[TIO], Altar 1b		1,53	cf. RIC V (1) 261	SAN 23 NV.99.267
216.	A5	CONSEC]RA[TIO], Altar 1b		0,68F	cf. RIC V (1) 261	PS.B.2734.54

[DIVO CL]AVDIO

217.	A5	[CONSECR]ATIO, Altar 1b		0,66	cf. RIC V (1) 261	PS.B.2734.23

Anv.: Ilegível

218.	A5	Ilegível, Altar 1b		0,57	cf. RIC V (1) 261	"XL b)"

DIVO CLA[VDIO]

219.	A5	CONSECRA[TI]O, Altar 1a/b		0,94	cf. RIC V (1) 261	"XL a)"

Anv.: Ilegível

220.	A5	Ilegível; Altar 1 a-b		0,83	cf. RIC V (1) 261	2502

Anv.: Ilegível

221.	A5	[Ilegível, Altar 1a/b		0,77F	cf. RIC V (1) 261	1178 (4)

[DIVO CL]AV[DIO]

222.	A5	Ilegível, tipo indeterminado		1,07	-	PS.B.2734.9

Anverso póstumo e reverso das emissões em vida

[DIVO] CLAVDIO

223.	A5	Ilegível; figura para a esq. com cornucópia (...)	? -//-	2,17	-	2384

[DIVO CLA]VDIO

224.	A5	[...] AVG, fig. fem. indet., com cornucópia (...)	? -//-	0,91	-	PS.B.2735.24 NV.01.211

Anverso das emissões em vida e reverso póstumo

IMP [...]

225.	A5	Ilegível, Águia 2		2,35F	-	2457

QUINTILO

Roma

270

IMP C M AVR CL QVINTILLVS AVG

226.	D8	MARTI PACIF	X -//-	2,66	RIC V(1) 24	8256

Milão

270

IMP QVINTILLVS AVG

227.	D8	MAR[T]I P[ACI]	- -//P	1,77	RIC V (1) 58	PS.B.2734.6

AURELIANO

Roma

11ª emissão: início - Setembro 275

IMP AVRELIANVS AVG (Denário)

228.	B1	VICTORIA AVG, cativo aos pés de Vitória	- -//B	2,53	RIC V (1) 73	PS.B.2734.32

Cízico

8ª emissão - 2ª fase: Primavera 273 - Primavera 274

IMP C AVRELIANVS AVG

229.	B2	ORIENS AVG; Sol caminhando para a esq., calcando prisioneiro	- -//Cε	3,06	RIC V (1) 360	MAMM.010054

10ª emissão: início - Verão 275

IMP AVRELIANVS AVG

230.	B2	RESTITVTOR EXERCITI	A//XXI	3,59	RIC V (1) 366	6518

PROBO

Roma

4ª emissão: 279

IMP PRO-BVS AVG

231.	B2	ROMAE AETER	--//[R]‿γ	3,73F	RIC V (2) 185	PS.B.2734.41

Ticinum

6ª emissão: 279

VIRTVS PROBI AVG

232.	B6e	SECVRIT PERP	- -//ςXXT	3,11	RIC V (2) 575	MAMM.010057

MAXIMIANO
Lyon
2ª emissão: primavera-verão 286
IMP C VAL MAXIMIANVS P F AVG

233.	D8	IOVI CONSERVATORI	D -//-	3,48	Bastien 70	8238

O IMPÉRIO DAS GÁLIAS
VITORINO
Casa da moeda I
Emissão III
[IMP] C VICTORINVS P F AVG

234.	D8	[P]AX AVG	V *//-	3,07	Elmer 682	4402

Emissão IV-V
Anv.: Ilegível

235.	A5	Ilegível, tipo *Virtus aug*		2,12	-	PS.B.2735.49

Emissão V
IMP C VICTORINVS [P F AVG]

236.	D8	VIRTVS AVG		2,78	Elmer 699	2312

TÉTRICO I
Casa da Moeda I
Emissão III-IV
[... TETRICV]S P F AVG

237.	D8	[SPES PVBLIC]A, Spes caminhando para a esq.; apenas uma perna visível através do vestido		2,01	-	PS.B.2735.46

Emissão Va
IMP TETRICVS P F AVG

238.	B2	HILARITAS AVGG		2,77	Elmer 789	4417

IMP C TETRICVS P F AVG

239.	D8	VIRTVS AVGG		1,93	Elmer 780	MAMM.010055

Emissão Vb
[... TE]TRICVS P F AVG

240.	D8	[SAL]VS AVGG		2,94	-	PS.B.2735.36

TÉTRICO II
Emissão IVa
Anv.: Ilegível, (híbrida, com R/ de Tétrico I)

241.	C4	[PAX AV]G; Paz para a esq. com ramo e ceptro vertical		2,24	-	4421

Emissão V
C PIV ESV TETRICVS CAES

242.	C4	SPES AVGG; Spes caminhando para a esq.; apenas uma perna visível através do vestido		3,98	Elmer 791	MAMM.010055

Casa da Moeda II
Emissão I-III
[... TETRIC]VS AVG

243.	B2	[FIDES MI]LITVM		3,93	-	6569

Imitações

[IMP] C TETRICVS [...] , (híbrido com reverso de Vitorino)

244.	B2?	Ilegível; Salus com ceptro e pátera, alimentando serpente		1,60	-	2621

[...]ICVS [...] (imitação de Tétrico I)

245.	Z	[...]VS [...]; tipo *Salus Augg:* Salus com leme e pátera, alimentando serpente		1,00		VI

3. Período 294-305

A TETRARQUIA

Londres

c. 297 (*Nummus*)

FL VAL CONSTANTIVS NOB C

246.	A2	GENIO POPV - LI ROMANI	- -//LON	9,38	RIC VI 4a	MAMM.010059	Fig. 199

Roma

c. 297-298 (Neoantoninianos)

IMP DIO[CLETIAN]VS P F AVG

247.	D9	VOT/XX	Θ//-	1,94	RIC VI 83	3590

[CONSTA]NTIVS NOB [CAES]

248.	D8	VOT/XX	Γ//-	1,79	RIC VI 88a	PS.B.2734.11

Cartago

c. 303 (Neoantoninianos)

IMP C MAXIMIANVS [P F AVG]

249.	D8	VOT/XX	FK//-	2,44	RIC VI 37b	6549

Anv.: Ilegível (Diocleciano/Maximiano)

250.	D8	VO[T] / XX	FK//-	2,37	cf. RIC VI 37-38	8245

Alexandria

c. 296-297 (Neoantoniniano)

IMP C DIOCLETIANVS P F AVG

251.	D8	[CONCOR]DIA MI-LITVM	A//ALE	1,92	RIC VI 46a	PS.B.2735.55

Imperador e casa da moeda indeterminados

Anv.: Fruste

252.	-	Fruste		3,04	-	3673

c. O século IV

1. Período 305-330

Londres

Nummi

CONSTANTINVS P F AVG (c. meados 310-312)

253.	D3	COMITI AVGG NN	- *//PLN	2,98	RIC VI 153	3647	Fig. 199

IMP CONSTANTI-NVS AG (319-320)

254.	E2e	VICTORIAE LAETAE PRINC PERP, VOT/PR	♦//PLN	2,99	RIC VII 159	PS.B.2735.61

CRISPVS - NOBIL C (323-324)

255.	B5e	BEAT TRA-NQLITAS, VOT/IS/XX	- -//PLON	2,66	RIC VII 279	2507

Londres, Lyon ou Trier

CONSTANTINVS [...] (321-324)

256.	A2?	BEATA TRA - NQVIL[ITAS, VOT / IS / XX]	- -//P[...]	2,14	-	PS.B.2735.42

Lyon

[IMP] CONSTANTINVS P F AVG (c. 309-310)

257.	D4	SOLI INVIC-TO COMITI	F T//PLG	3,72	RIC VI 310	2390

Anv: Ilegível (319-320)

258.	Z	Ilegível; tipo *Victoriae Laetae Princ Perp*	- -//2 cativos	1,21F	cf. RIC VII pp. 126-128	6544

[CONSTAN]TINVS IVN NOB C (321-323)

259.	C3e	[BEATA TRANQVILLITAS, VOTIS]/XX	- -//?	3,01	cf. RIC VII pp. 131-133	2500

Trier

FL CL CONSTANTINVS IVN N C (317-318)

260.	D2	PRINCIPI IVVENTVTIS	F T//•ATR	3,20	RIC VII 172	MAMM.010060	Fig. 199
261.	D2	[PRI]NCIPI I - VVENTVTIS	F T//?	1,58	RIC VII 172	3684	

CONSTAN - TINVS AVG (323)

262.	E1	BEATA TRAN - QVILLITAS, VO/TIS/XX	- -//•PTR◡	2,17	RIC VII 389	P S.B.2734.10

CONSTAN - TINVS AVG (324-325)

263.	A2	PROVIDEN - TIAE CAESS, porta	- -//STR	1,49	cf. RIC VII 449	PS.B. 2735.41

[FL IVL CONSTANT]IVS NOB C (326)

264.	D3e	PROVIDEN - TIA CAESS	- -//STR ◡̇	2,03	RIC VII 480	2546	Fig. 199

Arles

IMP CONSTANTINVS P F AVG (inícios de 316)

265.	D3	SOLI INV - I - [CTO CO]MITI	T F//QARL	2,92	RIC VII 72	PS.B.2735.39	
266.	B1	SOLI INVIC - TO COMITI	T/* F//PARL	3,22	RIC VII 85	MAMM.010061	Fig. 199

CRISPVS NOB CAES (321)

267.	A2	[CAE]SARVM NOSTRORVM, VOT/V	- -//TA	2,29	RIC VII 230	PS.B.2735.54

Aquileia

IMP C MAXIMIANVS P F AVG (Outono 307-c. 309/310)

268.	A2	CONSERV - VRB SVAE; Roma, com ceptro e globo, sentada em templo hexástilo com estrela no frontão	- -//AQP	5,44	RIC VI 121b	MAMM.010058	Fig. 199

[CONSTANT]INVS IVN NOB C (320-321)

269.	D3	[CAESA]RVM NOSTRORVM, VOT/X	- -//[A]QT	1,80	RIC VII 79	PS.B.2734.19

Ticinum

CONST - [ANTI]NVS AVG (319-320)

270.	E1	VIRTVS EXERCIT, VOT / XX	- -//?	2,11	cf. RIC VII pp. 376-378	PS.B.2735.47

CONSTAN - TINVS AVG (322-325)

271.	A2	D N CONSTANTINI MAX AVG, VOT / XX	◡ //?	2,07	RIC VII 167	2568

Óstia

IMP C MAXENTIVS P F AVG (fim 309-Outb. 312)

272.	A2	AETE - RNITAS - AVG N	- -//MOSTP	5,19	RIC VI 35	PS.B.2735.31
273.	A2	[AE]TE - RNITAS A - VG N	- -//?	5,10	cf. RIC VI 35	PS.B.2735.43

Roma

IMP CONSTANTINVS P F AVG (312-313)

274.	C1	GENIO POPV - LI ROMANI	- -//RT	4,49	RIC VI 292a	PS.B.2735.59

IMP LICINIVS P F AVG

275.	B1	SPQR OPTIMO PRINCIPI	- -//RQ	3,24	RIC VI 349c	6539

IMP LICINIVS P F AVG (314-315)

276.	B1	SOLI INV - I - CTO COMITI	R/X F//RP	1,63F	RIC VII 30	2541
277.	B1	SOLI IN - VI - CTO CO[MITI]	R/X F//?	1,95F	RIC VII 30	4704

IMP CONSTANTINVS P F AVG (315)

278.	D3	SOLI INV - I - CTO COMITI	S F//RT	2,20	RIC VII 33	6504

IMP CONSTANTINVS P F AVG (316)

279.	D3	SOLI INV - I - CT COM D N	∗◡//RQ	2,64	RIC VII 49	NV.99.301	Fig. 199

IMP CONSTANTINVS P F AVG (316-317)

280.	D3?	SOLI IN - VI - CTO COMITI	- -//R?	2,53	RIC VII 57	6537

CONSTAN - TINVS AVG (324-325)

281.	A2	PROVIDEN - TIAE AVGG	- -//RP	2,34	RIC VII 264	MAMM.010062

CONSTAN-TINVS AVG (329)

282.	A2	D N CONSTANTINI MAX AVG, VOT/XXX	- -//RP	2,55	RIC VII 318	2555

Síscia

IMP CONSTANTINVS P F AVG (319)

283.	E5	VICTORIAE LAETAE PRINC PERP, VOT/PR	- -//?SIS•	2,03	RIC VII 59	NV.04.121

CONSTANTINVS IVN NOB C (320)[6]

284.	A2	CAESARVM NOSTRORVM, VOT/V	- -//ΔSIS	3,39	RIC VII 157	4407[6]

Tessalonica

CONSTANTINVS IVN NOB C (320-321)

285.	D3e	CAESARVM NOSTRORVM, VOT/V	- -//TSBVI	2,95	RIC VII 122	8244

Nicomédia

CONSTAN - TINVS AVG (328-329)

286.	A7	PROVIDEN - TIAE AVGG, porta de acampamento	- -//SMNς	2,29	RIC VII 153	6538

Casa da moeda indeterminada

Anv.: Ilegível (318-320)

287.	Z	VICTORI[A LAETAE PRINC PERP] VOT/PR	?	1,81	-	XLV
288.	Xe	Ilegível; tipo *Victoriae Laetae Princ Perp*	?//?	2,75	-	NV.01.235

[...] CO[...] (324-330)

289.	X1	PROVID[ENTIAE AVGG/CAESS?]; porta de acampamento	?	0,90	-	PS.B.2735.17

2. Período 330-348

Lyon

[V]RB[S ROMA] (333-334)

290.	E3e	Loba e gémeos	- -//*PL[G]	2,26	RIC VII 267	2648

CONSTANS-P F AVG (337- *ante* Abril 340)

291.	D7	GLORI-A EXER-CITVS (1 estdt.)	Y//?	1,25	RIC VIII 24	6824

CONSTANTI-[VS P F AVG] (341-348)

292.	D3/6	VIC[TORIAE DD] AVGG Q NN	S/T//SLG	1,42	RIC VIII 45-46	NV.01.152

Anv.: Ilegível (Constante/Constâncio II)

293.	D6	[...]; Tipo *Victoriae dd auggq nn*	- -//PL[G]	0,76F	cf. RIC VIII 39-41	2529
294.	D?	VI[CTORIAE DD AVGGQ NN]	S/T//?	1,16	cf. RIC VIII 45-48	2558

Lyon/Arles

CONSTAN[...] (341-348)

295.	D6	[VICTORIAE D]D [AVGG]Q NN	⸙ //S[...]	0,69F	cf. RIC VIII, p. 181/209	6556

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[6] RIC não refere a utilização da 4ª oficina para Constantino II em Síscia no decurso desta emissão, mas tão só das 3ª e 5ª oficinas.

Trier

CONSTANTINVS I[VN NOB C] (330-333)

296.	B1	GLOR - [IA EXERC - ITVS] (2 estdt.)	- -//TRP[?]	1,65	cf. RIC VII 520/527/545	PS.B. 2735.21

FL IVL CONSTA[NTIVS NO]B C (335-337)

297.	B1	GLOR - IA EX[ERC - ITVS] (1 estdt.)	- -//•TRS•	1,64	RIC VII 592	2552

VRBS ROMA (337-340)

298.	E3e	Loba e gémeos	- -//TRS[...]	1,32	-	2513

[FL MAX THEO] - DORAE AVG (337- *ante* Abril 340)

299.	F4	PIETAS RO[MANA]	- -//?	1,29	cf. RIC VIII p. 143-144	6814

Anv.: Ilegível (Constante/Constâncio II) (*post* Abril 340)

300.	D6/7	GLORI - A EXER - CITVS (1 estdt.)	M//[...]	1,74	cf. RIC VIII p. 145	2572

[CONSTAN] - S P F AVG (341-348)

301.	D6	VICTORIAE D[D AVGG Q NN]	🍃//TRS	1,76	RIC VIII 185	6561

[CONSTAN] - S P F AVG

302.	D6	[VICTORIAE DD] A[VGG Q NN]	🍃//?	1,15	RIC VIII 185	3658 (3)

[CONST]AN - S P F AVG

303.	D5	[VICTORIAE DD AVGG] Q NN	D//TRS	1,52	RIC VIII 186	2398

Arles

CONSTANTINVS IVN NOB C (330)

304.	B1	GLOR - IA EXERC - ITVS (2 estdt.)	*//SCONST	2,64	RIC VII 346	NV.04.122	Fig. 199

CONSTANTI - NVS MAX AVG (332)

305.	D6	GLOR - IA EXERC - ITVS (2 estdt.)	🌿 //PCONST	1,75	RIC VII 358	2542

FL IVL CONSTANTIVS [NOB C] (332-333)

306.	D3	GLOR-IA EX[ERC-ITV]S (2 estd.)	🌿 //SCONS[T]	1,75	RIC VII 367	3648 (1)

CONSTAN[TI - NVS MAX AVG] (336)

307.	D6	Ilegível; tipo *Gloria Exercitus* (1 estd.)	☧//?	1,42	cf. RIC VII 394	4728

CONSTANTI - [NVS IVN N C] (336)

308.	B1	GLOR - IA EXERC - ITVS (1 estd.)	☧ //?	0,96	RIC VII 395	2400

[FL IVL] CONSTANS NOB C (336)

309.	D4	GLOR-[IA EXERC-ITVS] (1 estd.)	☧//SCONST	1,43	RIC VII 397	6553

CONSTAN-TINOPOLIS (336)

310.	E4e	Vitória sobre Proa	☧//[...]CONST	1,28	RIC VII 401	2521	Fig. 199

[CONSTAN] - TINOPOLIS (336)

311.	E4e	Vitória sobre proa	☧//SCONST	1,54	RIC VII 401	2388

[IMP CONSTA] - NTINVS AVG (337- *ante* Abril 340)

312.	D7	GLOR-IA E[XERC-ITVS] (1 estdt.)	O//[...]CON[ST]	1,05	RIC VIII 1	PS.B.2734.61

IMP CONS - [TANS AVG] (337- *ante* Abril 340)

313.	D7	[GLOR-I]A EXERC-[ITVS] (1 estdt.)	O//[...]CONST	1,71	RIC VIII 6	PS.B.2735.29

VRBS ROMA (337- *ante* Abril 340)

314.	E3e	Loba e gémeos	O//SCONST	1,30	RIC VIII 8	6566

Anv.: Ilegível (Constante/Constâncio II) 337-340 a.Abril)

315.	D7	[GLOR]-IA EXER[C-ITVS] (1 estdt.)	◡//[...CO]NST	1,38	RIC VIII 11-13	PS.B.2734.29

Anv: ilegível (337- *ante* Abril 340)

316.	E4e	Vitória sobre proa	◡ -//SCON[ST]	0,86	RIC VIII 16	PS.B.2734.60

[CONSTAN] - TINVS AVG (337- ante Abril 340)

317.	D7	[GLOR - IA E]XERC - ITVS (1 estdt.)	X//SCON[ST]	1,18F	RIC VIII 20	PS.B.2734.66

[V]RBS ROMA (337- *ante* Abril 340)

318.	E3e	Loba e gémeos	X//[...CONST]	1,12	RIC VIII 25	3643 (2)

CONSTAN - [TINOPOLIS] (337- *ante* Abril 340)

319.	E4e	Vitória sobre proa	X//SCO[N]S[T]	0,93	RIC VIII 26	4406

CONSTANTI - VS P F AVG (337- *ante* Abril 340)

320.	D7	GLORI - A EXER - CITVS (1 estd.)	N//[...CONST]	1,78	RIC VIII 35	6820

CONSTAN - TINVS AVG (337- *ante* Abril 340)

321.	D7	GLORI - A EXER - [CIT]VS (1 estd.)	X//PCONST	1,43	RIC VIII 45	2585

Anv.: Ilegível (337- *ante* Abril 340)

322.	Z	Ilegível; tipo *Gloria Exercitus* (1 estd.)	◡ //?	0,48F	cf. RIC VIII p. 205	3679

CONSTANTI - VS P F AVG (*post* Abril 340)

323.	D7	GLORI - A EXER - CITVS (1 estd.)	G//PARL	1,38	RIC VIII 56	2319

CONSTANS - P F AVG

324.	D6	GLORI - [A EXER - CITVS] (1 estd.)	G//SARL	1,37	RIC VIII 57	2528

[CONST]ANS - [P F AVG] (341-348)

325.	D7	VICTORI[AE DD AVGG Q NN]	NPE//SAR[L]	1,43	RIC VIII 77	PS.B.2734.50

CONSTANS - P F AVG

326.	D5	VICTORIAE DD AVGG Q NN	MA//SARL	1,10	RIC VIII 79	6815
327.	D5	VICTORIAE D[D AVGG Q NN]	MA//SARL	2,06	RIC VIII 79	2569

Anv.: Ilegível (Constante/Constâncio II)

328.	D?	[VICTOR]IAE DD A[VGG Q NN]	MA//[...]	0,95F	cf. RIC VIII 78-82	PS.B.2735.30
329.	D?	Ilegível; tipo *Victoriae dd augg q nn*	MA//[...]	1,24	cf. RIC VIII 78-82	4717

CONSTAN - [TIV]S P F [AVG]

330.	D7	[VICTO]RIAE DD AVGG Q NN	P//PARL	1,34	RIC VIII 84	3657	Fig. 199

CONSTANS - [P F AVG]

331.	D6/7	VICTOR[IAE DD AVGG Q NN]	P//[...]	1,29	cf. RIC VIII 85-86	S/Nº [7]

[CONSTAN] - S P F [AVG]

332.	D7	Ilegível; tipo *Victoriae dd augg q nn*	P//SAR[L]	1,32	RIC VIII 87	6526

CONSTAN[...]

333.	D6/7	Ilegível; tipo *Victoriae dd augg q nn*	P//?	1,29	RIC VIII 83-87	2392

[CONSTANTI] - VS P F AVG

334.	D7	[VICTO]RIAE DD AVGG Q NN	PV//?	1,32	RIC VIII 88	6803

CONSTANTI - VS P F AVG

335.	D6/7	VICTORI[AE DD AVGG Q NN]	⸙ //[?A]RL	0,94	cf. RIC VIII 90-1/95-6	2553

CONSTAN - S P F AVG

336.	D5	VICTORIAE DD AVGG Q NN	⸙ //[?A]RL	0,97	RIV VIII 92	2316

CONSTANS - P F AVG

337.	D6	[VICTORIAE DD AVGG] Q NN	?//[...]ARL	2,10	cf. RIC VIII pp. 208-209	3644

Aquileia

VRBS ROMA (334-335)

338.	E3e	Loba e gémeos	- •//AQ[...]	2,28	RIC VII 128?	6529

[CONSTAN] - S P F AVG

339.	D7	VICTORIAE DD AVGG Q NN	- -//•AQP	1,20	RIC VIII 79	3999 (6)

Roma

FL IVL CONSTANTIVS NOB C (330)

340.	D3	GLOR-[IA] EXERC-[IT]VS (2 estdt.)	- -//RFT	1,49	RIC VII 329	PS.B.2735.18

FL IVL CONSTANTIVS NOB C (330-331)

341.	D3	GLOR-IA EXERC-ITVS (2 estdt.)	- -//RBT	1,55	RIC VII 337	XXXIX

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[7] Moeda acompanhada da anotação: "Sector I, Estrutura I (interior do silo: 22/2/95)".

CONSTANTI – NOPOLIS

342.	E4e	Vitória sobre proa	- -//RBE	1,99	RIC VII 339	PS.B.2734.34
343.	E4e	Vitória sobre proa	- -//RBE	1,51	RIC VII 339	PS.B.2735.40

CONSTANTI - NVS MAX [AVG] (333-335)

344.	D6	GLOR-IA EXERC-ITVS (2 estdt.)	- -//RΩP	2,22	RIC VII 350	PS.B.2735.27

CONSTANTINVS IVN NOB C (333-335)

345.	B1	GLOR-IA EXERC-ITVS (2 estdt.)	- -//RΩP	2,09	RIC VII 351	PS.B.2735.23
346.	B1	GLOR-IA EXERC-ITVS (2 estdt.)	- -//RΩP	2,13	RIC VII 351	2617
347.	B1	GLOR-[IA] EXERC-IT[VS] (2 estdt.)	- -//RΩP	1,29	RIC VII 351	3588 (2)

FL IVL CONSTANTIVS NOB C

348.	D3	GLOR-IA [EXERC]-ITVS (2 estdt.)	- -//RΩT	2,39	RIC VII 352	PS.B.2735.13

VRBS ROMA

349.	E3e	Loba e gémeos	- -//RΩQ	1,86	RIC VII 354	PS.B.2735.25
350.	E3e	Loba e gémeos	- -//RΩ[Q]	1,77	RIC VII 354	PS.B.2735.33

CONSTANTI - NOPOLIS

351.	E4e	Vitória sobre proa	- -//RΩE	2,19	RIC VII 355	PS.B.2735.34

CONSTANTI - NOPOLIS (335-336)

352.	E4e	Vitória sobre proa	- -//R*ε	2,27	RIC VII 371	4740

CONSTANTI - NVS IVN N C (336)

353.	B1	[GLOR]-IA EXERC-ITVS (1 estdt.)	- -//RΩS	2,03	RIC VII 382	MAMM.010063

CONSTAN[TI - NVS] MAX AVG (336-337)

354.	D6	GLOR-IA EXERC-[ITVS] (1 estdt.)	- -//R*P	1,35	RIC VII 391	8266

CONSTANTI - NVS IVN N C

355.	B1	GLOR-[IA EXERC]-ITVS (1 estdt.)	- -//R*S	1,42	RIC VII 392	2570

CONSTANTI - NVS IVN N C

356.	B1	[GLOR-IA] EXERC-ITVS (1 estdt.)	- -//[R]*[...]	1,17	RIC VII 392	8274

FL CONSTANS NOB CAES

357.	D3	GLOR-IA EXERC-ITVS (1 estdt.)	- -//R*P	1,17	RIC VII 394	PS.B.2735.15

FL C[ONSTANS NOB C]AES

358.	D3	GLOR - IA EXERC - ITVS (1 estdt.)	- -//R*[...]	0,96	RIC VII 394	PS.B.2735.26

FL D[ELMATIVS NOB C]

359.	D3/B1	[GLOR-IA E]XERC-ITVS (1 estdt.)	- -//R*S	1,64	cf. RIC VII 395	3999 (3)

FL DELMA - [TIVS NOB C]

360.	B1	[GL]OR-IA EXERC-ITVS (1 estdt.)	- -//[R]*[...]	1,43	RIC VII 395	8255

VIC CONS[TAN] - TINVS AVG (337- *ante* Abril 340)

361.	B4	[VI]RTVS AVGVSTI	- -//R❦P	1,28	RIC VIII 4	4424

CONSTA[NTINOPOLIS]

362.	E4e	Vitória sobre proa	- -//[R]❦ε	1,43	RIC VIII 18	8271

VIC CONST[ANTINVS AVG]

363.	B4	[GLOR-IA EXERC]-ITV[S] (1 estdt.)	- -//[R]*P	1,01	RIC VIII 24	PS.B.2734.21

D N FL CON[...] (Constante/Constâncio II)

364.	D7	[GLOR-IA EXERC]-ITVS (1 estdt.)	- -//R*P	1,38	RIC VIII 25-26	2582

[CONS]TAN[TINOPOLIS]

365.	E4e	Vitória sobre proa	- -//R*ε	0,57F	RIC VIII 30	2564

D N FL CONSTANS AVG

366.	D7	[GLOR-IA EXERC]-ITVS (1 estdt.)	- -//[...]Q	1,56	cf. RIC VIII p. 249-251	4716

[D N FL CO]NSTANS AVG

367.	D7	GLO[R-IA EXERC]-ITVS (1 estdt.)	- -//R[...]	0,94	cf. RIC VIII p. 249-251	1175 (2)

D N FL CONSTANS [AVG]

368.	D7	[GLOR]-IA EXER[C]-ITVS (1 estdt.)	- -//?	0,80F	cf. RIC VIII p. 249-251	PS.B.2735.28

[VIC] CONSTANTINVS AVG

369.	B4	GLOR - IA EXERC - ITVS (1 estdt.)	- -//?	1,02	cf. RIC VIII, p. 250-251	PS.B.2634.3

D N [FL CONSTA]NS A[V]G

370.	D7	[SECVRITAS] REIP	- -//R[...]	1,02	cf. RIC VIII p. 250	PS.B.2735.32

D N FL CONSTANTIVS AVG

371.	D7	Ilegível; tipo *Securitas Reip*	- -//[...]	1,52	cf. RIC VIII, p. 250	1175 (4)

Anv.: Ilegível

372.	D7	[SECVRI - TAS] REIP	- -//?	1,68	cf. RIC VIII p. 250	2517
373.	D5	[SECVRI-TAS] REIP	- -//?	1,38	cf. RIC VIII p. 249-250	2589
374.	D?	Ilegível; tipo *Securitas Reip* (?)	- -//?	1,23	cf. RIC VIII p. 249-250	3653

VIC CONSTANTINVS AVG

375.	B4	[V]IRTVS AVGVSTI	- -//?	1,31	cf. RIC VIII p. 250-251	2341

Anv.: Ilegível (Constantino II)

376.	B4	Ilegível; tipo *Virtus augusti*	- -//?	0,67	cf. RIC VIII pp. 249-251	PS.B.2734.2

CONSTAN - S P F AVG (341-348)

377.	D7	VICT[ORIAE] DD AVGG Q NN	- -//R☉ε	1,36	RIC VIII 84	LAG.2735.1

CONSTAN - [S P F AVG]

378.	D7	Ilegível; tipo *Victoriae dd augg q nn*	- -//R⸙[...]	1,39	RIC VIII 92	3651 (2)

CONSTAN - S P F AVG

379.	D7	VICTORIAE DD A[VGG Q NN]	⸙//R[...]	1,40	RIC VIII 94	2606

CONSTAN - [S P F] AVG

380.	D7	VICTORIAE DD AVGG Q [NN]	⸙//Rε	1,10F	RIC VIII 94	4743

CONSTAN - S P F AVG

381.	D?	[VICT]ORIA[E DD] AVGG Q NN	- -//[...]T	1,26	cf. RIC VIII p. 253-254	2603

Síscia

CONSTAN - S P F AVG (337-340)

382.	D6	GLOR - IA EXERC - ITVS (1 estdt.)	- -//BSIS◡̇	1,44	RIC VIII 99	2573

Heracleia

CONSTANTI - NVS MAX AVG (336-337)

383.	D6	GLOR - IA EXERC - ITVS (1 estdt.)	- -//SMHB	1,57	RIC VII 150	MAMM.010065

D N CONSTAN -TIVS P F AVG (337-340)

384.	A2	GLOR -IA EXERC -[ITVS] (1 estdt.)	- -//SMH[...]	1,24	RIC VIII 34	2321

CONSTAN -[...] (C II/Cs)

385.	A9	[GLOR -IA EXERC] -ITVS (1 estdt.)	- -//SMHΔ	0,66F	cf. RIC VIII p. 431-432	PS.B.2734.28

Constantinopla

330-333

CONSTANTI - NVS MAX AVG

386.	D6	GLOR - IA EXERC - ITVS (2 estdt.)	- -//CONSΘ	2,00	RIC VII 59	2458

333-335

CONSTAN - TINOPOLI

387.	E4e	Vitória sobre proa	- -//CONSZ•	1,72	RIC VII 79	4711

CONSTANTI - NVS MAX AVG

388.	D6	GLOR - IA EXERC - ITVS (2 estdt.)	- -//•CONSH•	2,12	RIC VII 80	4731

336-337

CONSTANTI - NVS MAX AVG

389.	D6	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//CONSΔ[?]	2,22	RIC VII 137/149	2501

337-340

[D N] CONSTAN - TIVS P F AVG

390.	A8	GLOR-[IA EXE]RC-ITVS • (1 estdt.)	- -//CO[NS...]	1,52	RIC VIII 27	8234

FL IVL HEL - ENAE A[VG]

391.	F3	PAX PV - BLICA •	- -//CONSε	0,79	RIC VIII 34	8263

DV CONSTANTI - NVS P T AVGG

392.	A10	Imperador em Quadriga	- -//CONS	1,23	RIC VIII 37	2605

[D N] CONSTAN - TIVS [P F AVG]

393.	A8	[GLOR-IA E]XERC-[ITV]S (1 estdt.)	- -//CONS[...]	1,40	cf. RIC VIII 27/43	PS.B.2735.16

D N CONSTA - NS P F AVG

394.	A8	GLOR-[IA EXERC]-ITVS (1 estdt.)	- -// CONSς	1,25	RIC VIII 45	6525

D N CONST[...] AVG

395.	A8	[GLOR]-IA EX[ERC-ITVS] (1 estdt.)	*//[C]O[NS...]	0,76F	cf. RIC VIII p. 449	4401

D N CO[...]

396.	D?	GL[OR-IA EXERC-ITVS] (1 estdt.)	- -// CON[S...]	0,78F	-	6527

341-348

[D N] CONSTAN - TIVS [P F AVG]

397.	A8	VOT/XX/MVLT/XXX	- -//[C]ON[...]	1,60	RIC VIII 69	6563

Cízico

CONSTANTINVS IVN NOB C (331-333/4)

398.	B1	GLOR-[IA EX]ERC-ITVS (2 estdt.)	- -//SMKΓ	2,94	RIC VII 81	PS.B.2735.56

VRBS ROMA (332/3-335)

399.	E3e	Loba e gémeos	- -//•SMKΔ	1,76	RIC VII 105	NV.01.163

[FL] IVL CONSTANS NOB C (336-337)

400.	D3	GLOR-•IA [EXERC-ITVS] (1 estdt.)	- -//SMK[...]	1,36	RIC VII 142	PS.B.2634.2

DV CONSTANTI - NVS P T AVGG (337-*ante* Abril 340)

401.	A10	Imperador em quadriga	- -//SMKΔ	1,54	RIC VIII 4	6546

D N CONSTA - NS P F AVG

402.	A2	GLOR-[IA EXERC-ITVS] (1 estdt.)	- -//SMKB	1,01	cf. RIC VIII 14/18	PS.B.2734.30

[D]V CONSTANTI - [NVS P T AVGG]

403.	A10	Imperador em quadriga	- -//SMK[...]	0,72	cf. RIC VIII p. 490-491	PS.B.2735.22

[D N CONS]TAN - TIVS P F AVG (341-348)

404.	A7	VOT/XX/MVLT/XXX	- -//SMK[...]	1,37	RIC VIII 48	2618

Nicomédia

CONSTANTI - NVS MAX AVG (330-335)

405.	D6	GLOR - IA EXERC - ITVS (2 estdt.)	- -//SMNB	1,95	RIC VII 188	MAMM.010066

D N CONSTA - [NS P] F AVG (337-340)

406.	A9	GLOR-IA EXE[RC]-ITVS (1 estdt.)	- -//SMNΓ	0,94	RIC VIII 15	PS.B.2735.60

DV CONSTANTI - NVS P T AVGG

407.	A10	Imperador em quadriga	- -//SMNB	0,96	RIC VIII 18	2587

CONSTAN - [TIVS AVG]

408.	A7	GL[OR-IA EXERC]-ITVS (1 estdt.)	- -//SMNS	1,32	RIC VIII 19	6571

D N CONSTA - [N]S P F AVG

409.	A9	GLOR-[IA EXERC-ITVS] (1 estdt.)	- -//SMN[...]	1,19	RIC VIII 15	4418

D N CONSTA - NS P F AVG (341-348)

410.	A8	VOT/XX/MVLT/XXX	- -//SMNB•	1,41	RIC VIII 59	6522

D N CONS[...]

411.	A8	VOT/XX/MVLT/XXX	- -//SMNε	1,47	cf. RIC VIII p. 474-475	1175 (3)

D N CONS[... P] F AVG

412.	A7	VOT / XX / MVLT / XXX	- -//SMN[...]	1,11	cf. RIC VIII pp. 474-475	8259

Antioquia

CONSTANTINVS IVN NOB C (336-337)

413.	B1	GLOR -IA EXERC -ITVS (1 estdt.)	- -//SMAN[...]	1,30	RIC VII 200	8249

CON[STAN] -TIVS AVG (337-340)

414.	A7	[GL]OR -IA EXER[C] -ITVS (1 estdt.)	**:**//SMANΔI	1,70	RIC VIII 54	8232

DV CONSTANTI -NVS P T AVGG (341-348)

415.	A10	VN - MR	- -//SMANZ	1,90	RIC VIII 112	4712

Alexandria

CONSTAN -TIVS AVG (337- *ante* Abril 340

416.	D3	GLOR -IA EXERC -ITVS (1 estdt.)	- -//SMALΔ	1,72	RIC VIII 18	2543

[D N CONST] - ANS P F AVG (341-348)

417.	A?	VOT/XX/MV[LT/XXX]	- -//[...]	0,67F	cf. RIC VIII, p. 541	6572

Constantinopla/Nicomédia

[F]L CON[STANS NOB CAES] (336-337)

418.	D3e	[GL]O[R -IA EXER]C -ITVS (1 estdt.)	- -//[...]	1,06	cf. RIC VII p. 589-590/635	2378

Casa da moeda ocidental

CONSTAN - S P F AV[G] (341-348)

419.	D6	VICTORIAE DD AVGG Q NN	- -//?	1,67	-	4727

CONSTAN - [S P F AVG]

420.	D6	[VICTORIA]E DD [AVGG Q NN]	⸙//?	1,35F	-	2516

[CON]STAN - S P F AVG

421.	D6	VICTORIAE DD AVGG Q NN	- -//?	1,17	-	2620

CONST[AN] - S P F AVG

422.	D6	VICTORIAE [DD A]VGG Q NN	- -//?	0,84	-	3999 (5)

[CONS]TA[N] - S P F AVG

423.	D6	VICTORIAE DD A[VGG Q NN]	- -//?	1,65	-	6812

[CONSTANS] - P F AVG

424.	D6	[VI]CTORIAE [DD AVGG Q NN]	- -/?	1,30	-	2380

[CONSTAN] - S P F AVG

425.	D7	VICTORIAE DD AVGG Q NN	- -//?	1,13	-	PS.B.2734.1

CONSTAN - [S P F A]VG

426.	D7?	[VIC]TO[RIAE DD AVGG Q NN]	?//?	1,31	-	4409

CONSTAN - S P F AVG

427.	D6	Ilegível; tipo *Victoriae dd augg q nn*	? //?	1,35	-	8260

[CONSTAN] - S P [F AVG]

428.	D?	Ilegível; tipo *Victoriae dd augg q nn*	?//?	1,42	-	2642

[CONSTAN] - S P F AVG

429.	D6	Ilegível; tipo *Victoriae dd augg q nn*	?	1,08F	-	4426

CONSTA[... A]VG

430.	D6	VICTORIAE DD AV[GG Q NN]	- -//?	1,32	-	NV.01.173

CONS[TAN ...]

431.	D6	Ilegível; tipo *Victoriae dd auggq nn*	?//?	1,29	-	NV.01.162

Anv.: Ilegível

432.	D6	[VICTORIAE] DD A[VGG Q NN]	- -//?	0,81F	-	PS.B.2734.59

Anv.: Ilegível

433.	D7	Ilegível; tipo *Victoriae dd auggq nn*	- -//?	0,40	-	NV.04.105

Anv.: Ilegível

434.	D5	Ilegível; tipo *Victoriae dd auggq nn*	?	1,34	-	2643

Anv.: Ilegível

435.	D?	Ilegível; tipo *Victoriae dd auggq nn*	?	1,31	-	3658 (2)

Anv.: Ilegível

436.	D?	Ilegível; tipo *Victoriae dd auggq nn*	?	1,04	-	4714

Anv.: Ilegível

437.	D?	Ilegível; tipo *Victoriae dd auggq nn*	- -//?	0,57	-	4718

Anv.: Ilegível

438.	D?	Ilegível; tipo *Victoriae dd augg q nn*	?	1,21	-	2404

Anv.: Ilegível

439.	D?	Ilegível; tipo *Victoriae dd augg q nn*	?	0,87	-	PS.B.2734.25

Casa da moeda oriental

[CONSTAN] - TINOP[OLIS] (335-340)

440.	E4e	GLOR-IA EXERC-I[TVS] (1 estdt.)	- -//?	1,82	-	2597

DV CON[STANTI - NVS PT AVGG] (341-348)

441.	A10	Ilegível; tipo *Iust Ven Mem*	- -//?	0,75	-	4730

Anv.: Ilegível

442.	A10	VN - MR	- -//?	1,50	-	4722

CONSTA - NS P F AVG

443.	A7?	VOT/XX/MVLT/XXX	- -//[...]	1,34	-	2584

D N CONSTA - NS P F AVG

444.	A7	VOT/XX/MVLT/XXX	- -//[...]	1,71	-	8276

D N CONSTA - NS P F AVG

445.	A7	VOT/XX/MVLT/XXX	- -//?	1,59	-	6570

[D N] CONSTA - [NS P F AVG]

446.	A7	VOT / XX / MVLT / XXX	- -//?	0,65	-	V

D N CONSTAN - TIVS P F AVG

447.	A7	VOT / XX / MVLT / XXX	- -//?	0,79	-	NV.01.161

Anv.: Ilegível

448.	A7	[VOT]/XX/MVLT/XXX	- -//?	1,14	-	2566

Casa da moeda indeterminada

[CONSTANTI] - NVS MAX AVG (330-335)

449.	D6	[GL]OR-[IA] EXERC-ITVS (2 estdt.)	- -//?	1,33	-	4398

[... CONSTANTI] - NVS MAX AVG

450.	D3e	[GLOR-I]A EXERC-ITVS (2 estdt.)	- -//[...]	2,12	-	8243

CONSTANTI-NVS MAX AVG

451.	D7	GLOR - IA EXERC - ITVS (2 estd.)	- -//?	1,22	-	PS.B.2734.63

CO[NSTANTINVS ...] (CI/CII CAES]

452.	X1	[GLOR-IA EXERC]-IT[VS] (2 estdt.)	?	0,53F	-	PS.B.2634.1

CONSTANTINVS IVN NOB C

453.	B1	GLOR-IA EXERC-[ITVS] (2 estdt.)	- -//?	1,22	-	3649

CONSTAN - TINVS AVG (335-340)

454.	D6	[GLOR]-IA EXERC-ITVS (1 estd.)	- -//?	1,04	-	2550

FL IVL [CONST]ANS [...]

455.	D3?	[GLOR-IA] EXERC-ITVS (1 estdt.)	- -//?	1,38	-	2413

[D] N CONST[A] - NS P F AVG

456.	A?	GLOR-[IA EXERC]-ITVS (1 estdt.)	- -//[...]	1,24	-	2641

CON[STAN] - TIVS AVG

457.	A8?	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//?	1,20	-	2408

CONSTAN - TIVS AVG

458.	D3	GLOR - IA EXERC - ITVS (1 estdt.)	- -//?	1,24	-	4713

CONSTANTINVS [...]

459.	B1	[GL]OR-IA EXER[C]-ITVS (1 estdt.)	- -//?	1,20	-	2395

CONSTAN[...] (C I?)

460.	D6	[GLOR-IA] EXE[RC-ITVS] (1 estdt.)	- -//?	1,49	-	6575

CONSTAN - [...]

461.	D5?	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//?	1,04F	-	2593

[...] AVG

462.	Z	GLOR-[IA EXERC-ITVS] (1 estdt.)	- -//?	1,17	-	PS.B.2735.14

Anv.: [...]

463.	Z	[GLOR-I]A EXER[C-ITVS] (1 estdt.)	- -//?	1,34	-	2406

Anv.: [...]

464.	D3	[GL]OR-[IA EXERC-ITVS] (1 estdt.)	- -//?	0,94F	-	6823

Anv.: Ilegível

465.	A8	[GLOR]-IA EXERC-ITV[S] (1 estd.)	?	1,31	-	XLIV

Anv.: Ilegível

466.	D6?	[GLOR-IA EX]ERC-ITVS (1 estdt.)	- -//?	0,88	-	PS.B.2734.27

Anv.: Ilegível

467.	B1	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//?	1,72	-	2554

Anv.: Ilegível

468.	D?	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//?	1,10	-	4709

CONSTAN – TINOPOLIS (330-340)

469.	E4e	Vitória sobre proa	- -//?	1,87	-	4707

CONSTAN - TINOPO[LIS]

470.	E4e	Vitória sobre proa	- -//?	1,74	-	1179

[CONSTAN] - TINOPOLIS

471.	E4e	Vitória sobre proa	- -//[...]O[...]	1,51	-	PS.B.2534.6

CONSTANTI - [NOP]OLIS

472.	E4e	Vitória sobre proa	-//?	1,06	-	NV.01.166

CONSTANTI - [NOPOLIS]

473.	E4e	Vitória sobre proa	- -//?	1,70	-	NV.01.167

CONSTANTI - NOPO[LIS]

474.	E4e	Vitória sobre proa	- -//?	1,08	-	NV.01.164

[CONS]TAN - [TI]NOPOLIS

475.	E4e	Vitória sobre proa	- -//?	1,53	-	4715

Anv.: Ilegível (Constantinopolis)

476.	E4e	Vitória sobre proa	- -//?	1,12	-	6552

[VRBS] ROMA

477.	E3e	Loba e gémeos	- -//?	1,39	-	6801

VRBS ROMA

478.	E3e	Loba e gémeos	?	1,23	-	6806

[V]RBS [ROMA]

479.	E3e	Loba e gémeos	?	1,10	-	2338

DV CONSTAN[TI - NVS PT AVGG] (337-340)

480.	A10	Quadriga	- -//SM[...]	1,36	-	3655 (2)

[DV CONSTANTI] - NVS PT [AVGG]

481.	A10	Quadriga	- -/?	0,88	-	2345

D N CONSTAN - TIVS P F AVG

482.	A7?	Ilegível; tipo indeterminado		1,80	-	2595

3. Período 348-364[8]

Amiens

351-352

[D N MAGNEN] - TIVS P F AVG, A atrás do busto (AE 2)

483.	D1	[VICTORIAE DD N]N AVG ET CAE, VOT/V/ MVLT/X	- -//AMB 🌿	4,22	RIC VIII 11	PS.B.2534.5

Lyon

350-353

D N MAGNEN-TIVS P F AVG, A atrás do busto (AE 2)

484.	D1	[GLORIA ROMAN]ORVM	- -//RPLG	3,95	RIC VIII 115	PS.B.2734.7

351-353

D N DE[CEN]TIVS NOB CAES

485.	B7	[VICTORI]AE [DD NN AVG ET CAES], VOT / V /MVLT / X	SV//[...]	1,10F	RIC VIII 143	NV.99.302

355-360

D N CONSTAN-TIVS P F AVG[9]

486.	D6	FEL TEMP - [REPARATIO] (*FH*3)	- -//GPLG	2,23	RIC VIII 190	2645

[D N CONSTAN]-TIVS P F AVG, M atrás do busto

487.	D5	FEL TEMP - [REPARATIO] (*FH*3)	- -//GPLG	1,62	RIC VIII 197	6533

[FL CL IV]LIANVS NOB C; M atrás do busto

488.	D1	[FEL TEMP - RE]PARATIO (*FH*3)	- -//[...]	1,46F	RIC VIII 199-200	6550

D N CONSTAN-TIVS P F AVG

489.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//?PLG	1,79	cf. RIC VIII pp. 190-191	8257

Trier

348-350

D N CON[STA] - NS P F AVG (AE 2)

490.	D5	FEL TEMP – REPARATIO (Galera e fénix)	- -//TRS	4,23	RIC VIII 215	PS.B. 2734.5

Arles

350-353

D N M[AGNEN -T]IVS P F AVG, A atrás do busto (AE 2)

491.	D1	GLORIA R[OMANORVM]	- -//FPA[R]	3,70	RIC VIII 157	3654

351-353

[D N MAGNE]N - TIVS P F AVG, A atrás do busto (AE2)

492.	D1	VICTORIA DD NN AVG ET CAE[S], VOT / V /MVL / X (sem coluna)	?//?	3,70	cf. RIC VIII p. 216	2420

348-350

D N CONSTAN - TIVS P F AVG (AE 2)

493.	D5	FEL TEMP - REPARATIO (Galera e fénix)	- -//PARL	5,22	RIC VIII 99	NV.04.120	Fig. 199
494.	D5	FEL TEMP - REPARATIO (Galera e fénix)	- -//?ARL	4,86	RIC VIII 99	2613	

[D N CONST]AN - TIVS P F AVG (AE2)

495.	D10e	FEL TEMP RE - PARATIO (Cabana)	- -//PARL	3,46	RIC VIII 108	PS.B.2735.58

D N CONSTAN - TIVS P F AVG

496.	D5	F[EL TEMP R]EPARATIO (Fénix sobre globo)	- -//SARL🌿	1,88	RIC VIII 112	2596	Fig. 199

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[8] A maior parte do numerário deste período é composta por *Aes* 3. No entanto, a presença de moedas com valores distintos, traduzidos no facto de ostentarem módulos superiores *Aes* 2 ou inferiores *Aes* 4 levou-nos a colocar à frente destas a indicação relativa aos mesmos (AE 2 e AE 4).

[9] O tipo *Fel Temp Reparatio*, com o típico reverso do cavaleiro em queda (*falling horseman*) possui diversas variantes, 3 das quais foram identificadas no presente catálogo:
FH 2: soldado armado de lança e escudo ataca cavaleiro derrubado, sentado no solo junto ao cavalo;
FH 3: soldado armado de lança e escudo ataca cavaleiro que, na queda, ergue um braço para trás;
FH 4: soldado armado de lança e escudo ataca cavaleiro que, na queda, se agarra ao pescoço do cavalo com ambas as mãos.

D N CO[NS]TA[N] - TIVS P F AVG

497.	D5	FEL TE[MP] – REPARATIO (Galera e fénix)	- -//PARL•	1,36F	RIC VIII 116	PS.B.2734.12

D N CONSTAN - TIVS P F AVG; A atrás do busto (AE2)

498.	D5	FEL TEMP – REPARATIO (*FH* 2)	A -//PARL	3,34	RIC VIII 118	PS.B.2734.8

353-355

D N CONSTAN - TIVS P F AVG

499.	D5	FEL TEMP - REPARATIO (*FH* 3)	D -//SCON	2,45	RIC VIII 215	2460
500.	D5	FEL TEMP – REPARATIO (*FH* 3)	D -//?	1,70	RIC VIII 215	PS.B.2534.4
501.	D5	[FEL TEMP R]E – PARATIO (*FH* 3)	D -//?CON	1,79	RIC VIII 220	PS.B.2534.1
502.	D5	[FELTEMP R] – EPARATIO (*FH* 3)	D - //?	2,62	RIC VIII 222	3655

D N CONSTAN - [TIVS P F AVG]

503.	D5	FEL TEMP R – EPARATIO (*FH* 3)	D -//PCON	1,56	RIC VIII 222	PS.B.2534.17

D N CONSTAN - TIVS P F AVG

504.	D5	FEL TEMP [RE]PARATIO (*FH* 3)	D//TCON	2,40	cf. RIC VIII 215/220/223	2533

D N CONSTAN - TIVS P F AVG

505.	D5	FEL TEMP – REPARATIO (*FH* 3)	E -//?CON	1,94	RIC VIII 224	6551
506.	D5	[FEL T]EMP – REPARATIO (*FH* 3)	E -//?CON	1,91	RIC VIII 224	8250

[D N] CONSTAN - TIVS P F AVG

507.	D5	FEL TEMP R – EPARATIO (*FH* 3)	E//SCON	1,79	RIC VIII 224	PS.B.2734.4

D N CONSTAN - [TIVS P F AVG]

508.	D5	FEL [TEMP REPARATIO] (*FH* 3)	? -//SCON	1,27F	cf. RIC VIII p. 219	2599

[D N CONSTAN] - TIVS P F AVG

509.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	D -//?CON	1,24F	cf. RIC VIII p. 219	3985

355-360

D N CONSTAN - TIVS P F AVG

510.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	- -//TCON	2,16F	RIC VIII 266	1173

[D N] CONSTAN - TIVS P F AVG

511.	D5	FEL TEMP R – EPARATIO (*FH* 3)	M//PCON	2,59	RIC VIII 269	2579

D N CONSTAN - TIVS P F AVG

512.	D5	FEL TEMP R – EPARATIO (*FH* 3)	M//SCON	1,82	RIC VIII 269	3645

D N CONSTAN - TIVS P F AVG

513.	D5	[FEL TEMP] – REPARATIO (*FH* 3)	M//[?C]ON	1,85	RIC VIII 272	4001 (2)

D N IVLIAN - [VS NOB CAES]

514.	D1	[FEL TEMP] – REPARATIO (*FH* 3)	M//TCON	1,20	RIC VIII 273	2615

D N CONSTAN - [TIVS P F AVG]

515.	D5	FEL [TEMP REPARA]TIO (*FH* 3)	M//PCON	1,18	RIC VIII 269/272	2591

D N CONSTAN - [TIVS P F AVG]

516.	D5	FEL [TEMP RE]PARATIO (*FH* 3)	M//PCON	2,25	cf. RIC VIII p. 224	8237

Anv.: Ilegível (Constâncio II/Juliano)

517.	D1/5	[FEL TEMP RE]PAR[ATIO] (*FH* 3)	M//?	1,76	cf. RIC VIII p. 224	3593

D N CONSTAN - TIVS P F AVG

518.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M//?	1,44	cf. RIC VIII p. 224	8239

Anv.: Ilegível (Juliano)

519.	D1	*Ilegível; tipo Fel Temp Reparatio* (*FH* 3)	M//?	1,52F	cf. RIC VIII p. 224	2389

358-361

[D N CONSTAN] - TIVS P F AVG

520.	D5	[SPES] REI - PV[BLICE]	VAL-//[...]	1,69	RIC VIII 277	2514

D N CONSTAN - TIVS P F AVG

521.	D5	SPES REI - PVBLICE	* -//PCON	1,40	RIC VIII 300	6545

358-363

D N [...] (Constâncio II/Juliano)

522.	D5	SPES REI - PVBLICE	◡//?	2,39	cf. RIC VIII 298-299	3677

Aquileia

352-354

D N CONS[TANT]IVS IVN NOB C

523.	D1	FEL TEMP - [REP]ARA[TIO]	- -//AQT	1,29	RIC VIII 200	6805

Roma

351-352

D N MAGNEN - TIVS P F AVG; B atrás do busto (AE 2)

524.	D1	VICT DD NN AVG ET CAES, VOT/V/MVLT/X	- -//RQ	4,93	RIC VIII 214	4696

D N MAGNEN - TIVS P F AVG; Γ atrás do busto (AE 2)

525.	D1	VICT DD NN AVG ET CAES, VOT/V/MVLT/X	*//Rε	4,01	RIC VIII 218	4429

352-355

D N CONSTAN - [TI]VS P F AVG, B atrás do busto (AE2)

526.	D5	[F]EL TEMP [RE-PA]RAT[IO] (*FH* 4)	[Γ] -//RΩ[...]	1,89	RIC VIII 256	PS.B.2633.1

352-354

D N FL CL CONSTANTIVS NOB CAES, Δ atrás do busto (AE 2)

527.	D1	FEL TEMP RE - [PARATIO] (*FH* 4)	Γ -//R[...]	2,25F	cf. RIC VIII 261-265	3979

D N FL CL CONSTANTIVS NOB CAES

528.	D1	FEL TEMP – REPARATIO (*FH* 3)	- -//RZ	1,68	RIC VIII 274	3588 (3)

D N FL CL CONSTANTIVS [NOB CAES]

529.	D1	FEL TEMP - [REP]ARATIO (*FH* 3)	- -//R*[...]	1,68	RIC VIII 278	2638

D N [FL CL C]ONS[TANTI]VS N[OB CAES][10]

530.	D1	Ilegível; tipo *Fel temp reparatio* (*FH* 3)	- -//?	1,30	-	3995b

D N FL CL CONSTANTIVS NOB CAES

531.	D1	FEL TEMP - [REPARATIO] (*FH* 3)	- -//[...]	1,71	-	6560

355-361

D N CONSTAN - TIVS P F AVG

532.	D5	FEL TEM[P - REPARAT]IO (*FH* 3)	- -//RB⸙	1,51	RIC VIII 304	6548	
533.	D5	FEL T[EMP - REPA]RATIO (*FH* 3)	- -//RΩT	1,81	RIC VIII 309	1176	Fig. 200
534.	D5	FEL [TE]MP – REPARATIO (*FH* 3)	- -//RΩZ	2,09	RIC VIII 309	6807	
535.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//R•M•B	1,98	RIC VIII 314	6574	

[D N CONSTAN] - TIVS P F [AVG]

536.	D5	[FEL TEMP] – REPARATIO (*FH* 3)	- -//[R]Mε*	2,00	RIC VIII 316	6562

[D N CL IVL] - IANVS N C

537.	B7	FEL TEMP – REPARATIO (*FH* 3)	- -//RΩS	2,31	RIC VIII 311	LXVII

[D N CL IVL] - IANVS N C

538.	B7?	FEL TEMP - [REPARATIO] (*FH* 3)	- -//?	1,89F	cf. RIC VIII, p. 278	1175

Anv.: Ilegível (Juliano)

539.	B7	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	- -//?	1,27	cf. RIC VIII p. 278	2540

352-361

D N CONSTAN - TIVS P F AVG

540.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//[...]P	2,74	-	6540
541.	D5	[FEL TEMP] - REP[ARATIO] (*FH* 3)	- -//?	2,23	-	4422

D N CONSTAN - [TIVS P F AVG]

542.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	- -//?	1,82	-	2601

[D N C]ONSTAN - [TIVS P F AVG]

543.	D5	[FEL TEMP - REP]ARATIO (*FH* 3)	- -//?	1,59	-	2644

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[10] Os exemplares nº 530-531 e 540-551, apesar não apresentarem marca da casa da moeda legível, foram atribuídos a Roma pela iconografia do reverso, nomeadamente pelo cavaleiro de cabeça descoberta, pela posição da cabeça do cavalo, cuja testa assenta totalmente sobre o solo, e pela posição da perna direita do soldado, que desenha um angulo de quase noventa graus relativamente ao tronco (cf. Brück 1961: 20).

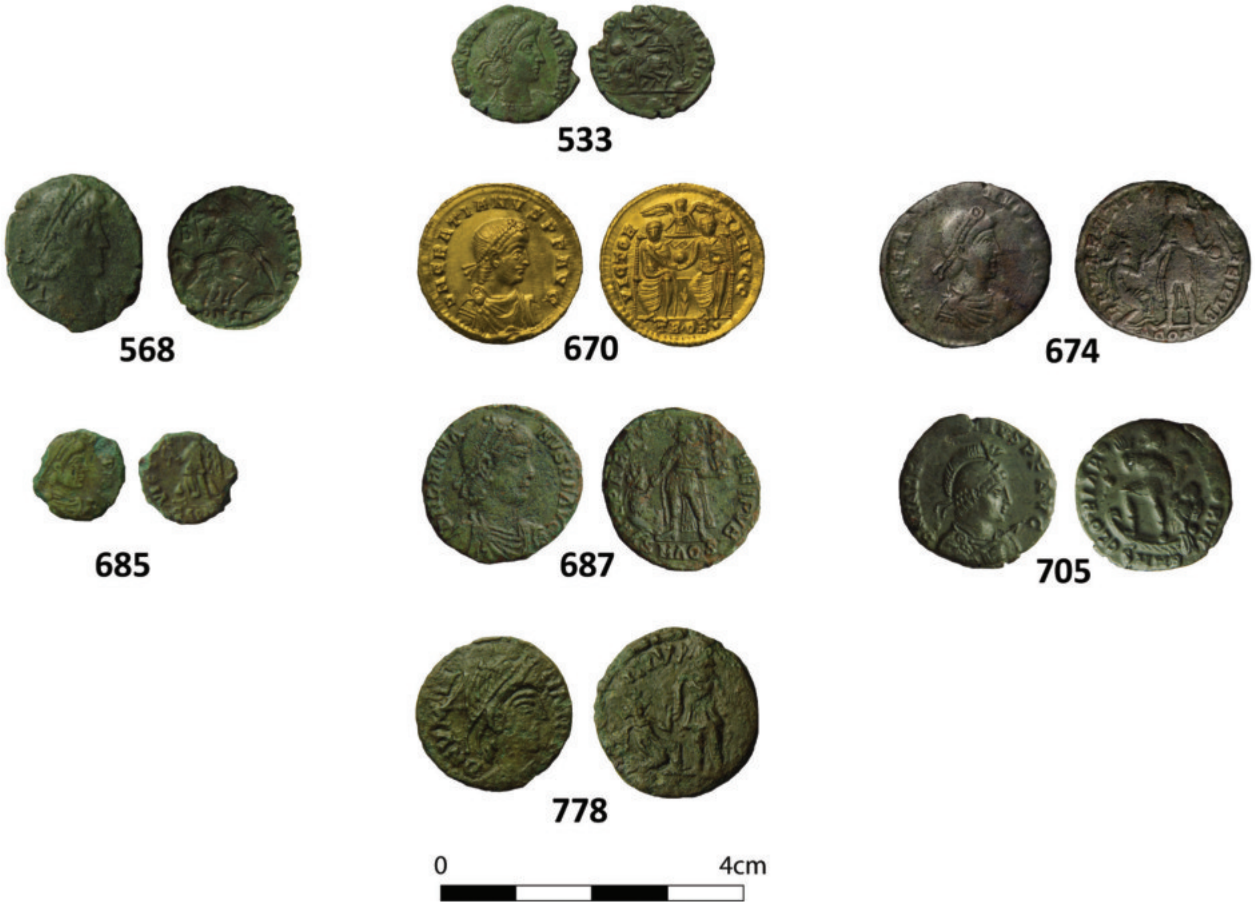

Fig. 200 *Ammaia*, Southern Gate. Coins catalogue nos. 533, 568, 670, 674, 685, 687, 705, 778.

[D N CONSTAN - T]IVS P F AVG

544.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	- -//?	1,60	-	3665

D N CONSTAN - [TIVS P F AVG]

545.	D5	[FEL T]EM[P - REPARATIO] (*FH* 3)	- -//?	1,59	-	4411

[D N CON]STAN - [TIVS P F AVG]

546.	D5	[FEL TEMP - REPA]RATIO (*FH* 3)	- -//?	1,68	-	4700

[D N CONSTAN - TIVS P]F AVG

547.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//?	2,07	-	2415

D N CONSTAN - [TIVS P F AVG]

548.	D5	FEL TEMP - REP[ARATIO]	- -//?	2,39	-	2456

Anv.: Ilegível (Constâncio II)

549.	D5	[F]EL TEMP-[REP]AR[ATIO] (*FH* 3)	- -//?	2,18	-	XLI
550.	D5	[FEL T]EM[P - REPARATIO] (*FH* 3)	- -//?	1,98	-	3651
551.	D5	FEL TE[MP - REPARATIO] (*FH* 3)	- -//?	2,27	-	4734

358-361

Anv.: Ilegível (Constâncio II)

552.	D5	SPES RE[I - PVBLICE]	- -//R*?	1,55	RIC VIII 320	6817

D N CL IVL - IANVS N C

553.	B7	SPES REI - PVBLICE	- -//?	2,30	RIC VIII 319/321	3999 (4)

Síscia

348-350

D N CONSTA - NS P F AVG (AE2)

554.	D5	FEL TEMP – REPARATIO (Galera e fénix)	- -//εSISXR	4,08	RIC VIII 205	2504

351-354

D N CONSTANTIVS IVN NOB C

555.	D1	FEL TEM[P-RE]PARATIO (*FH* 3)	- -//ASIS	1,83	RIC VIII 351	2385

Sirmio

351-355
D N CONSTAN - TIVS P F AVG

556.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//BSIRM	1,98	RIC VIII 48	2565

355-361
D N CONSTAN - TIVS P F AVG

557.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -//ASIRM•	1,79	RIC VIII 69	6816

Tessalonica

1 Março-Dezembro 350
D N CONSTAN -TIVS P F AVG; A atrás do busto (AE2)

558.	D5	FEL TEMP RE -PARATIO (*FH* 2)	A -//TSΔ	5,31	RIC VIII 129	XXXVIII

350-355
D N CONSTAN - TIVS P F AVG

559.	D5	FEL [TEMP REP]ARAT[IO] (*FH* 3)	A -//SMTS	2,08	RIC VIII 189	2557

D N CONSTAN- TIVS P F AVG

560.	D5	FEL TEMP – REPARATIO (*FH* 3)	A -//[SM]TS	1,74	RIC VIII 189	2588

D N CONSTAN -[TIVS P F AVG]

561.	D5	[FEL TEMP -REPA]RATIO (*FH* 3)	Δ -//SMTS	2,20	RIC VIII 189	8269

355-361
D N CONSTAN -TIVS P F AVG

562.	D5	[FEL TEMP] – REPARATIO (*FH* 3)	M -//SMTS[...]	2,03	RIC VIII 208	4729

D N CL IVLIAN -VS NOB [CAES]

563.	D1	[SPES R]EI - PVBLICE	- -//SMTSε	1,28F	RIC VIII 214	2525

Heracleia

351-354
D N CONSTAN -TIVS NOB C

564.	D1	FEL TEMP - REPARATIO (*FH* 3)	- -//?	2,23	cf. RIC VIII 91	2580

Constantinopla

351-354
D N FL CL CONSTANTIVS NOB CAES (AE2)

565.	D1	FEL TEMP RE - PARATIO (*FH* 4)	Γ• -//?	4,44	RIC VIII 107	2418

D N FL CONSTANTIVS NOB CAES (AE2)

566.	D1	FEL TEMP RE - [PARAT]IO (*FH* 4)	•S• *// CONSΘ	4,06	RIC VIII 117	3998 (2)

351-355
Anv.: Ilegível (Constâncio II); Δ atrás do busto (AE2)

567.	D5	[FEL TEMP RE]-PARATIO (*FH* 4)	B• -//[...]	3,53	RIC VIII 112	2322

[D N CONSTA]N - [TIVS P F AVG], Δ atrás do busto (AE2)

568.	D5	[FEL TEMP R]-EPARATIO (*FH* 4)	B* -//CONSΓ	4,10	RIC VIII 114	1177	Fig. 200

D N CONSTAN -TIVS P F AVG

569.	D5	FEL TEMP RE - PARATIO (*FH* 3)	- •// CONSZ	2,48	RIC VIII 121	6524

[D N] CONSTAN - TIVS P F AVG

570.	D5	FEL TEMP R - EPARATIO (*FH* 3)	- -//CONSθ•	2,22	RIC VIII 135	2498

355-361
[D N CONST]AN - [TIVS P F AVG]

571.	D5	[FEL TEMP REPAR]ATIO (*FH* 3-4)	- -//CONS[...]	2,13	cf. RIC VIII p. 458/460	2640

Anv.: Ilegível (Constâncio II)

572.	D5	Ilegível; tipo *Fel temp reparatio* (*FH* 3)	•M• -//CONS[...]	1,73	cf. RIC VIII p. 460	3643

Cízico

351-354
D N CONSTAN - TIVS P F AVG (AE2)

573.	D5	FEL TEMP RE - [PARATIO] (*FH* 3)	Γ -//SMKς	3,90	RIC VIII 95	2342

D N CONSTAN -TIVS P F AVG (AE 2)

574.	D5	FEL TEMP RE - [PARATIO] (*FH* 3)	•S•// SMK[...]	2,94	RIC VIII 102	4412

[D N] FL CL C[ONSTANTI]VS NOB CAES (AE2)

575.	D1	FEL TEMP RE - [PARATIO] (*FH* 3)	•S•// S[MK...]	3,65	RIC VIII 103	4705

D N FL CL CONSTA[NTIVS NOB CAES] (AE2)

576.	D1	[FEL TEMP RE] – PARATIO (*FH* 3)	•S• -//[...]	4,26	RIC VIII 103	2314 (1)

[D N] FL CL CONSTANTIVS [NOB CAES] (AE2)

577.	D1	[FEL T]EM[P RE-PARATIO] (*FH* 3)	•S• -// SMKΔ	2,57	RIC VIII 103	PS.B.2633.4

355-361

D N CONSTAN -TIVS P F AVG

578.	D5	FEL TEMP – REPARATIO (*FH* 3)	- -// SMKΔ	2,45	RIC VIII 110	6514

D N CONSTAN - TI[VS P F AVG]

579.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	* -//SMKB	1,51F	RIC VIII 113	6802

[D N CONSTAN] - TIVS P F AVG

580.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	* -//[S]MKς	2,22	RIC VIII 113	8252

[D N] CONSTAN - TIVS P F AVG

581.	D5	[F]EL TEMP-REPARA[TIO] (*FH* 3)	* -//[...]	3,28	RIC VIII 113	6543

D N CONSTAN - [TIVS P F AVG]

582.	D5	FEL TEMP – REPARATIO (*FH* 3)	* -//[...]	2,79	RIC VIII 113	6555

D N CONSTAN -TIVS P F AVG

583.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	•M•// SMKΓ	2,05	RIC VIII 115	2539

Nicomédia

351-355

D N CONSTAN - TIVS P F AVG , Δ atrás do busto (AE2)[11]

584.	D5	FEL TEMP [REPA]RATIO (*FH* 3)	- -//SMNA	2,03	cf. RIC VIII 89	2317

351-354

[D N FL] CL CONSTANTIVS NOB CAES (AE2)

585.	D1	FEL TE[MP RE]-PARATIO (*FH* 3)	[•S•] -//SMNA	4,39F	RIC VIII 93	4724

355-361

[D N CONSTAN] - TIVS P F AVG

586.	D5	FEL TEMP [RE-PARATIO] (*FH* 3)	A -//SMN[...]	1,90	RIC VIII 107	6565

D N CONSTAN - [TIVS P F AVG]

587.	D5	FEL [TEMP RE-PARATIO] (*FH* 3)	M - //SMNΓ	2,65	RIC VIII 110	4694

Antioquia

350-355

D N CONSTAN -TIVS P F AVG

588.	D5	FEL TEMP –REPARATIO (*FH* 3)	- -//ANBI	2,79	RIC VIII 153	2581

355-361

[D N CO]NSTAN -[TIVS P F AVG]

589.	D5	[FE]L TEMP RE -[PARATIO] (*FH*4)	M -//[...]	1,76	RIC VIII 191	6542

Tessalonica/Nicomédia

350-361

Anv.: Ilegível (Constâncio II)

590.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	A -//?	3,69	-	2532

Tessalonica/Antioquia

350-355

[D N CONSTAN] - TIVS P F AVG (AE2)

591.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	S -//?	4,38	-	6536

Cízico/Alexandria

351-355

D N C[ONSTAN -TIVS P F AVG] (AE2)

592.	D5	[FE]L TEMP RE-[PARATIO] (*FH*3)	•S• -//[...]	2,47F	-	PS.B.2534.3

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[11] Os tipos e marcas utilizadas são característicos dos AE 2 desta casa da moeda, mas o peso (2,03g) e o módulo (19,5mm) estão mais próximos de um AE3.

Casa da moeda indeterminada

348-350

D N CONSTA - NS P F AVG

593.	D5	[FEL TEMP] - REPARATIO Galera e fénix)	- -/?	1,97	-	2382

[D N CONSTA] - NS P F [AVG]

594.	D5	[FEL TEMP REPA]RATIO (Galera e fénix)	- -//?	1,47F	-	4719

D N CON[ST]AN - TIVS P F AVG

595.	D5	FEL TEMP REPARATIO (Fénix sobre globo)	- -//?	2,01	-	NV.01.160

348-355

D N CONS[TAN - TIVS] P F AVG (AE 2)

596.	D6?	FEL TEMP - REPARATIO (Galera e fénix)	- -//?	3,58	-	PS.B.2733.1

350-355

D N CONSTAN - [TIVS P] F AVG (AE2)

597.	D5	FEL TEMP RE - PARATIO (*FH* 3)	? -//[...]	4,41	-	PS.B.2734.16

D N CO[NSTAN - TIVS P F AVG] (AE2)

598.	D5	[FEL TEMP RE]PARATIO (*FH* ?)	? -//?	4,06	-	2646

351-354

D N [FL CL CONSTAN]TIVS NOB CAES (AE2)

599.	D1	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	? -//?	3,78	-	PS.B.2634.4

350-353

D N MAGN[EN - TIVS P F] AVG; A atrás do busto (AE2)

600.	D1	VICTORIAE DD NN [AVG ET CAES], VOT / V /MVLT / X, sem coluna	- -//?	4,68	-	1175 (6)

Anv.: Ilegível (Magnêncio/Decêncio) (AE2)

601.	B7/D1	[VICTORIAE DD NN AVG ET CAES, VOT]/V /MVLT / [X]	- -//?	3,02	-	II

351-361

[D N]CONS[TAN - TIVS P F AVG]

602.	D5	FEL TEMP [REPARATIO] (*FH* 3)	M -//[...]	2,32	-	8236

[D N CONSTAN] - TIVS P F AV[G]

603.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M -//?	1,39	-	6531

D N [CONSTAN] - TIVS P F AVG

604.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	M -//?	1,65	-	1175A

D N [CONSTAN - TIVS P] F AVG

605.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	M -//?	2,35	-	1175 (1)

D N CONSTAN - TIVS P F AVG

606.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M -//?	2,10	-	2556

Anv.: Ilegível (Constâncio II)

607.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M -//?	1,66F	-	2590

[D N CON]STAN - TIVS [P F AVG]

608.	D5	FEL TEMP - RE[PARATIO] (*FH* 3)	- -//[...]S[...]	1,60	-	NV.00.466

[D N C]ONSTAN - TIVS P F [AVG]

609.	D5	[FE]L TEMP RE-PAR[ATIO] (*FH* 3)	- -//?	2,02	-	2536

D N CONSTAN - [TIVS P F AVG]

610.	D5	[FEL TEMP REP]ARATIO (*FH* 3)	- -//?	1,74	-	2576

[D] N CONSTAN - TIVS P F AVG

611.	D5	[F]EL TEMP - REPARA[TIO] (*FH*3)	- -//?	1,91	-	2602

[D N C]ONSTAN - [TIVS P F AVG]

612.	D5	[FEL TEMP] - REPA[RATIO] (*FH*3)	? -//?	1,64	-	3658 (4)

[D N CONSTAN] - TIVS P F AVG

613.	D5	[FEL TE]MP RE-[PARATIO] (*FH*3)	- -//?	1,83	-	4428

D N CONST[AN - TIVS P F AVG]

614.	D5	FEL TEMP - REPA[RATIO] (*FH* 3)	- -//?	2,01	-	4698

D N CONSTAN - TIVS P F AVG

615.	D5	FEL TEMP - REPARATIO (*FH* 3)	- -//?	2,56	-	6559

[D N CONSTA]N - TIV[S P F AVG]

616.	D5	[FEL] TEMP - REPARATIO (*FH* 3)	- -//?	1,93	-	6573

[D N CONST]AN - TIVS [P F AVG]

617.	D5	[FEL TEMP] - REPAR[ATIO] (*FH*3)	? -//?	1,34F	-	6579

[D N CO]NSTAN - TIV[S P F AVG]

618.	D5	[FEL TEMP REPA]RATIO (*FH* 3)	? -//?	1,24F	-	2315

D N CONSTAN - TIVS P F [AVG]

619.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	?	2,15	-	2339

D N CONSTAN - TIVS P F AVG

620.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	- -//?	2,40	-	2407

[D N CONSTAN] - TI[VS P F AVG]

621.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	- -//?	0,97	-	NV.99.299

D N C[ONSTAN - TIVS P F] AVG

622.	D5	[FE]L TEMP - RE[PARATIO] (*FH*3)	- -//?	2,60	-	NV.04.127

[D N CO]NSTAN - [TIVS P F AVG]

623.	D5	[FEL TEMP] - REPAR[ATIO] (*FH*3)	- -//?	1,75	-	VIII

[D N CONSTAN] - TIVS P F AVG

624.	D5	FEL TEMP - [REPARATIO] (*FH* 3)	- -//?	1,40	-	8272

D N CONSTAN - [TIVS P F AVG]

625.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	- -//?	1,59	-	4001 (3)

D N CONSTAN - TIVS P F AVG

626.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	1,19	-	2608

D N [CONSTAN - TIVS] P F AVG

627.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M -//?	1,40	-	4414

[D N CONSTAN] - TIV[S P F AVG]

628.	D5	Ilegível; tipo *Fel Temp Reparatio*(*FH* 3)	?	1,32F	-	6532

D N CO[NSTAN - TIVS P F AVG]

629.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	1,76	-	6568

[D N CO]NSTAN - TIV[S P F AVG]

630.	D5	FE[L TEMP REPARATIO] (*FH* 3)	?	1,25	-	NV.00.467

[D N CONSTAN] - TIVS P F AVG

631.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	- -//?	1,71	-	NV.99.265

[D N CONSTAN - TI]VS P F [AVG]

632.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	? -//?	1,58	-	NV.99.300

Anv.: Ilegível (Constâncio II)

633.	D5	FEL TEMP - [R]EPARAT[IO] (*FH*3)	- -//[...]	1,58	-	8241
634.	D5	[FEL TEMP] - REPARATIO (*FH* 3)	- -//?	2,06	-	4701
635.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)		2,01	-	2505
636.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)		2,30	-	2506
637.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	- -//?	1,70	-	4404
638.	D5	FEL TEMP - REPARATIO (*FH* 3)	- -//?	2,00	-	1174
639.	D5	[FEL TEMP] - REPARATI[O] (*FH*3)	- -//?	0,84F	-	PS.B.2734.15
640.	D5?	[FEL TEMP RE]PARAT[IO] (*FH* 3)	? -//?	1,39F	-	8262
641.	D7	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)		2,97	-	6810[12]

[D N CONSTAN] - TIVS P F AV[G]

642.	D5	Ilegível; tipo indeterminado	?	2,11	-	2320

[... CONSTAN] - TIVS [...]

643.	D5	Fruste		1,39	-	4410

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[12] O diâmetro do *flan* é inferior ao dos cunhos.

Anv.: Ilegível (Constâncio II/Constâncio Galo/Juliano)

644.	X	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	? ?//?	1,16F	-	2561
645.	Z	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	1,45	-	3587
646.	D?	[FEL TEMP] - REPARATIO (*FH* 3)	- -//?	1,93	-	3999 (2)
647.	D?	[FEL TEMP R]EPARATIO (*FH* 3)	- -//[...]	1,39	-	4399
648.	D?	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	0,90F	-	2416
649.	D?	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	2,24F	-	2611

Anv.: Ilegível (Constâncio Galo/Juliano)

650.	D1	[FEL TEMP RE]PA[RATIO] (*FH* 3)	?	1,24	-	2340
651.	D1	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	1,74	-	3986
652.	D1?	Fruste	-	1,44F	-	2314 (2)

Anv.: Ilegível (AE2)

653.	X	Fruste		2,79	-	3995

355-361

D N IV[LIANVS ...]

654.	D1	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	- -//?	1,26	-	6811

D N IVLIA[...]

655.	D1	FEL TEMP - [REPARATIO] (*FH* 3)	? -//?	2,09	-	6821

Anv.: Ilegível (Juliano ?)

656.	D1	[FEL TEMP REPARA]TIO (*FH* 3)	- -//?	1,51F	-	2544

358-361

D N CONSTA[N - TIVS P F AVG]

657.	D5	[SPES REI] - PVBLICE	- -//?	1,42	-	2619

[D N CONSTAN] - TIVS P F AVG

658.	D5	[SPES REI] - PVBLICE	? -//?	1,88	-	4427

D N CONSTAN - TIVS P F AVG

659.	D5	SPES REI - [PVBLICE]	- -//[...]	1,77	-	4721

D N CONSTAN - TIVS P F AVG

660.	D5	[SPES] REI - PVBLI[CE]	- -//?	1,80	-	2454

[D N CON]STAN - [TIVS P F AVG]

661.	D5	Ilegível; tipo *Spes Reipublice*	?	1,18	-	2520

Anv.: Fruste

662.	-	Ilegível; tipo *Spes Reipublice*	?	0,40FF	-	3582

4. Período 364-402

Lyon

378-383

D N GRATIA-NVS P F AVG (AE2)

663.	D5	REPARATIO REIPVB	- -//LVGP	4,95	LRBC 372	MAMM.010071

D N GRATIA-NV[S P F] AVG (AE2)

664.	D5	REPARATIO REIPVB	- -//LVG?	2,79	LRBC 372	6554

D N GRATIA-NVS P F AVG (AE2)

665.	D5	[REPARATIO] REIPVB	- S//LVGP	3,68	LRBC 376	4001(4)

[D N GRA]TIA-NVS P F AVG (AE2)

666.	D5	[REPARATIO] REIPVB	- S//LVGS	3,10	LRBC 376	4736

D N GRATIA-NVS P F AVG (AE2)

667.	D5	REPARATIO REIPVB	- S//LVGS	4,19	LRBC 376	MAMM.010070

383-387

[D N MAG] MAXI - MVS P F AVG (AE2)

668.	D5	[VICTOR] - IA A[VGG]	- -//?	3,42	LRBC 386	2563

Lyon/Arles

383-387

[D] N [M]AG MAXI - [MVS P F AVG] (AE2)

669.	D5	Ilegível; tipo *Victoria Augg*	- -/?	4,61		2346

Trier

Novembro de 368

D N GRATIANVS P F AVG (*Solidus*)

670.	D5	VICTOR - IA AVGG; Imperadores sentados, de frente, segurando um globo; por cima, Vitória alada e, no solo, uma palma	- -//TROB•	4,45	Depeyrot 1996a 30.3	MAMM.010067	Fig. 200

383-387

D N MAG MAX - IMVS P F AVG (AE2)

671.	D5	REPARATIO REIPVB	- -//SMTRS	4,90	LRBC 154	MAMM.010076

Arles

378-383

D N GRATIA - NVS P F AVG (AE2)

672.	D5	REPARATIO REIPVB	- -//PCON	5,00	LRBC 548	3994	
673.	D5	REPARATIO REIPVB	- -//PCON	4,86	LRBC 548	2511	
674.	D5	REPARATIO REIPVB	- -//PCON	5,70	LRBC 548	MAMM.010073	Fig. 200
675.	D5	REPARATIO REIPVB	- -//SCON	4,34	LRBC 548	2538	
676.	D5	REPARATIO REIPVB	- -//SCON	5,27	LRBC 548	2567	
677.	D5	REPARATIO REIPVB	- -//TCON	5,53	LLRBC 548	6520	

D N GRATIA - [NVS P F AVG] (AE2)

678.	D5	REPARATIO [REIPVB]	- -//TCON	4,07	LRBC 548	4001 (5)

D N GRATIA - NVS P F AVG (AE4)

679.	D5	VOT / XV /MVLT / XX	- -//TCON	1,16	LRBC 552	2575
680.	D5	VOT / XV /MVLT / XX	- -//TCON	1,28	LRBC 552	6822

D N VALENTINIANVS IVN P F AVG (AE2)

681.	D5	REPARATIO REIPVB	- -//[?C]ON	3,96	LRBC 550	2410

383-387

D N MAG MAXI - MVS P F AVG (AE2)

682.	D5	REPARATIO REIPVB	- -//SCON	4,31	LRBC 553	PS.B.2734.3
683.	D5	[REP]ARATIO REIPVB	- -//TCON	6,18	LRBC 553	4405

378-387

Anv.: Ilegível (AE2)

684.	D5	REPARATIO [REIPVB]	- -//PCON	3,37	-	3584

388-402

[...] P F AVG (AE4)

685.	D5	VICT[ORIA AVGGG]	- - //SCON	0,86	LRBC p. 57	3670A	Fig. 200

Aquileia

378-383

D N GRATIA - NVS P F AVG (AE2)

686.	D5	REPARATIO REIPVB	- -//[SM]AQP	4,24	LRBC 1064	3656 (1)

D N GRATIA - NVS P F AVG (AE2)

687.	D5	REPARATIO REIPVB	- -//SMAQS	4,90	LRBC 1064	3981	Fig. 200

D N VALEN[TINI - AN]VS P F AV[G] (AE2)

688.	D5	REPARATIO REIPVB (AE2)	- -//SMA[Q?]	4,66	LRBC 1066	4739

D N TH[EO]DO - [SIVS P F AVG] (AE2)

689.	D5	REPARATI[O REIPVB]	- -//SMAQP	3,81	LRBC 1067	8240

Roma

367-375

[D N VALEN] - S P F AVG (AE3)

690.	D5	[SECVRITAS] REIPVBLICA[E]	- -//[R]•SECVN[DAE]	1,01F	LRBC 719	2522

D N VALEN - S P F AVG (AE3)

691.	D5	SECVRITAS REIPVLICAE	- -//SM🍃R[...]	2,47	LRBC 730	8242

378-383

D N GRATIA - NVS P F AVG (AE2)

692.	D5	REPARATIO REIPVB	- -//SMRP	3,79	LRBC 750	MAMM.010074

D N THEODO - SIVS P F AVG (AE2)

693.	D5	REPARATIO REIPVB	- -//SMRQ	4,06	LRBC 753	6564
694.	D5	REPARATIO REIPVB	- -//SMR[...]	4,60	LRBC 753	2639
695.	D5	REPARATIO REIPVB	- -//SMR[...]	4,43	LRBC 753	1175 (8)

D N THEODO - SIVS [P F AVG] (AE2)

696.	D5	[REPARATIO] REIPVB	- -//[S]MR[...]	4,52	LRBC 753	2414

Síscia

378-383

D N VALENTINIANVS IVN P F AVG (AE2)

697.	D5	REPARATIO REIPVB	- -//*ASISC	3,18	LRBC 1526	2411
698.	D5	REPARATIO REIPVB	- -//*BSISC	4,63	LRBC 1526	2607

D N THEODO - SIVS P F AVG (AE2)

699.	D5	REPARATIO REIPVB	- -//ASISC	3,93	LRBC 1514	4741
700.	D5	REPARATIO REIPVB	- -//ASISC•	4,80	LRBC 1521	4732

Tessalonica

364-367

D N VALEN -S P F AVG (AE3)

701.	D5	GLORIA RO - MANORVM	- -//TESΓ	1,69	LRBC 1705	4733

378-383

D N GRATIA-NVS P F AV[G] (AE2)

702.	D5	REPARATIO [REIPVB]	- B//[S]MTES	3,78F	LRBC 1823	NV.99.304

D N GRATIA -NVS P F AVG (AE2)

703.	D5	REPARATIO REIPVB	- Γ//[S]MTES	4,70	LRBC 1823	6528

Heracleia

393-395

D N ARCADI -VS P F AVG (AE2)

704.	D5	GLORIA ROMANORVM (Lábaro)	- -//SMHΔ	3,89	LRBC 1987	2545

Nicomédia

383

D N VALEN[TINIA]NVS P F AVG (AE2)

705.	E6	GLORIA RO - MANORVM (Galera)	• -//SMNB	3,69	LRBC 2371	2547	Fig. 200

Antioquia

378-383

D N THEODO -SIVS P F AVG (AE2)

706.	D5	REPARATIO REIPVB	- -//ANTΔ	5,60	LRBC 2682	MAMM.010069

393-395

D N ARCADI - VS P F AVG (AE2)

707.	D6	GLORIA ROMANORVM (Lábaro)	- -//[...]	4,57	LRBC 2782	2512

D N HONORIVS P F AVG (AE2)

708.	D5	GLORIA ROMANORVM (Lábaro)	- -//ANTΓ	4,40	LRBC 2783	4002 (1)

Casa da moeda oriental

393-395

[...]VS P F AVG (AE2)

709.	D5	GLORIA ROMANORVM (Lábaro)	- -//?	3,18	-	4419

Casa da moeda indeterminada

364-378

[...]S P F AVG – Valente (?) (AE3)

710.	D5	Ilegível; tipo *Gloria Romanorum* (Imperador com lábaro, para a dta., arrastando cativo)	- -//[...]	1,43F	-	2586

378-383

D N GRATIA - NVS [P F AVG] (AE2)

711.	D5	REPARATIO REIPVB	- -//?	1,81	-	6535

D N GRATIA - NVS P F AVG (AE2)

712.	D5	REPARATIO R[EIPVB]	- -//[...]	5,48	-	2497

[D N GRA]TIA - NVS P F AVG (AE2)

713.	D5	REPARATIO [REIPVB]	- -//?	3,64	-	2396

[D]N GR[ATIA - NVS] P F [AVG] (AE2)

714.	D5	Ilegível; tipo *Reparatio Reipub*	- -//?	2,97F	-	3584 (4)

D N GRA[TIA] - NVS [P F AVG] (AE 2)

715.	D5	Ilegível; tipo indeterminado	?	5,01	-	2612

D N GRATIA - NVS P F AVG (AE2)

716.	D5	REPARATIO REIPVB	- -//[...]	3,15	-	MAMM.010068

D N VALENTINIANVS P F AVG (AE2)

717.	D5	[R]EPARATIO [REIPVB]	- -//?	4,01	-	3654 (2)

D N VALENTINIANVS P F AVG (AE2)

718.	D5	Ilegível; tipo *Reparatio Reipub*	- -//?	3,49	-	3996

D N VAL]ENTINIANVS [P F AVG] (AE2)

719.	D5	[REPAR]ATIO [REIPVB]	- -//?	2,21	-	PS.B.2633.2

D N THEODO - SIVS P F AVG (AE2)

720.	D5	REPARA[TIO REIPVB]	- -//SM[...]	4,19	-	2313

[D N THEODO] - SIVS P F AVG (AE2)

721.	D5	REPARATIO [REIPVB]	- -//[...]	5,04	-	3650

D N GRATIA - NVS P F AVG (AE 4)

722.	D5	VOT/XV/MVLT/XX	- -//?	1,45	-	2549

[D N G]RATIA - [NVS P F AVG] (AE 4)

723.	D5	VOT/XV/MVLT/XX	- -//?	1,86	-	3658 (1)

[D N GRAT]IA - NVS P F AVG (AE 4)

724.	D5	VOT/XV/MVLT/XX	- -//?	1,51	-	4725

383-387

D N MAG MAXI - [MVS P F AVG] (AE2)

725.	D5	REPARATIO REIPVB	- -//?	3,44	-	4699

D N MAG MAXI - MVS P F AVG (AE2)

726.	D5	REPARATIO REIPVB	- -/?	4,52	-	2387

[D N M]AG MAXI - MVS P F AVG (AE2)

727.	D5	Ilegível; tipo *Reparatio Reipub*	- -//?	3,44F	-	2600

378-387

[...]VS P F AVG (AE2)

728.	D5	[R]EPARATIO [REIPVB]	? -//?	3,09	-	XLIII

[...]AVG

729.	D5	Ilegível; tipo *Reparatio Reipub*	- -//?	3,55	-	8258

Anv.: Ilegível (AE2)

730.	D5	REPARATIO [REIPVB]	- -//?	4,35	-	2405
731.	D?	[REPARATIO] REIPVB	- -//?	2,55F	-	6578
732.	Z	REPARA[TIO] - REI[PVB]	?	3,32	-	3646
733.	D5	Ilegível; tipo *Reparatio Reipub*	- -//?	2,75F	-	3990
734.				2,83F	-	3984
735.				3,56	-	2509
736.				4,54	-	4413
737.				4,55	-	4695
738.	D5	Ilegível; tipo *Reparatio Reipub*	?	2,53	-	4415
739.				4,07	-	2386

378-395

[D N THEODO] - SIVS P F AVG (AE2)

740.	D?	Fruste		1,73F	-	4430

Imperador e casa da moeda indeterminados

Anv.: Ilegível (AE2)

741.	D?	Ilegível; tipo indeterminado	?	3,25	-	3997

Anv.: Ilegível (AE3)

742.	D5	Ilegível; figura feminina para a esq. (Vitória?)	?	1,28	-	6813
743.	D5	Ilegível; figura feminina para a esq.	?	1,64F	-	3585

Anv.: Fruste (AE 3)

744.	-	Ilegível; Vitória (?) para a esq.	?	1,69	-	2560

Anv.: Fruste (AE3-4)

745.	-	Fruste		1,52	-	8264

Anv.: Ilegível (AE3/4)

746.	Z	Ilegível; tipo indeterminado	?	0,71F	-	3980

Anv.: Ilegível (AE 4)

747.	X	Ilegível; tipo indeterminado		1,33	-	2559
748.	Z	Fruste		1,69	-	3993 (2)

Anv.: Fruste (AE4)

749.	-	Ilegível; tipo indeterminado (Vitória para a esq.?)	?	1,39	-	4425
750.	-	Fruste		0,68	-	8251
751.	-	Fruste		0,94	-	2518
752.	-	Fruste		1,29	-	4002 (2)
753.	-	Fruste		1,36	-	2401
754.	-	Fruste		1,17	-	3674

Anv.: Ilegível (*minimus*)

755.	D5	Ilegível; tipo indeterminado		0,47	-	3592

Anv.: Fruste (*minimus*?)

756.	-	Fruste		1,14F	-	2578

Anv.: Fruste (*minimus*)

757.	-	Fruste		0,50	-	3584(2)

5. Imitações

1) Segundo protótipos de Lyon

C[O]NSTANTINVS I[...] (*minimus*)

758.	D3	GLO[R-I]A E[XERC-ITVS] (2 estdt.)	- -//PLG	0,49	-	3594

[...]G ANXI - MVS P T AVG (AE 2)

759.	D5	VICTORI - A AVG[...]; tipo *Reparatio Reipub*	- C//S[...]	4,58	cf. LRBC 555	8253

2) Segundo protótipos de Trier

[...] - N[...]V P F AVG

760.	D?	Ilegível; tipo *Victoriae dd auggq nn*	?/TR[...]	0,74	-	2616

3) Segundo protótipos de Arles

D N MAGNEN - TIVS P F AVG; A atrás do busto (AE2)

761.	D1	VICTORIAE DD NN AVG T CA[...], VOT / X / MVL / XX (sobre coluna)	- -//?	3,29	-	3987 (2)

D N CONSTAN - [...]

762.	D5	FEL [...] (*FH* 3)	- -//SCONS[...]	1,47	-	8254

[...]STA[...]S [...]

763.	D?	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	D -//?	0,74	-	3588

[...]AN - [...]

764.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	M//?	1,31	-	3988

D N GRATIA - NVS P F AVG

765.	D5	REPARATIO REIPVB	- -//SCON	5,32	-	MAMM.010075

[D] N GRATIA - NVS P F AV[G]

766.	D5	[REPARATIO REIP]VB	- -//?CO?	2,12	-	2519

DN MA[...]

767.	D5	Ilegível; tipo *Reparatio Reipub*	- -//[...]CON	2,96	-	4703

4) Segundo protótipos de Constantinopla

Anv.: Ilegível[13]

768.	D5	[FEL TEMP RE] - PARATIO (*FH* 3)	•S• *//?	1,57	-	4697

5) Segundo protótipos de casas da moeda não identificadas

[...]ANTI - VS NOB CA[...]

769.	D3?	GLOR-IA EXER[C-ITVS] (1 estdt.)	- -//?	2,22	-	4737

[...]G

770.	D3?	[...]ITIIS; tipo *Gloria Exercitus* (1 estdt.)	- -//?	0,34F	-	LAG 2437/1

[...]TII[...] (*minimus*)

771.	A2e?	Ilegível; tipo *Gloria Exercitus* (1 estdt.)	- -//IIHP	0,54	-	4726

D N C[...], A atrás do busto (AE 2)

772.	D5	FEL TEMP - [REPARATIO] (Galera e fénix)	- -//?	3,41	-	8273

Anv.: Ilegível

773.	D1	Ilegível; tipo *Victoriae dd nn aug et caes*	- -//?	1,80	-	3658 (5)

Anv.: Ilegível[14]

774.	D5	[...]; tipo *Fel Temp Reparatio* (*FH* 3)	? -//?	1,48	-	PS.B.2633.3

D N [...]IVS P F HVG[15]

775.	D5	[...]MP - REPARATIO (*FH* 3)	- -//?	1,16	-	2571

Anv.: Ilegível (*minimus*)

776.	D5	Ilegível; tipo *Fel Temp Reparatio* (*FH* 3)	?	0,76	-	4400

D N GRATIA - NVS P F AVG

777.	D5	REPARATIO REIPVB	- -//SM[...]	4,57	-	MAMM.010072

D N VA[...] - TINIA[...][16]

778.	D5	[...] III V[...]; tipo *Reparatio Reipub*	- -//?	4,57	-	2526	Fig. 200

D N G[...]

779.	D5	Ilegível; tipo *Reparatio Reipub*	- ?//?	1,28F	-	3581

6. Moedas ilegíveis (séculos III-IV)

a) Séculos III-IV

Anv.: Ilegível

780.	Z	Fruste		1,31	-	2403

Anv.: Fruste

781.	-	Ilegível; tipo indeterminado	?	1,92F	-	2343
782.	-	Fruste		0,56F	-	6557
783.	-	Fruste		2,28	-	2318
784.	-	Fruste		0,77F	-	4723
785.	-	Fruste		3,26	-	NV.99.298
786.	-	Fruste		2,69	-	2421

b) *Nummi/AE* (século IV)

Ilegível (*Nummus*?)

787.	A?	Ilegível; tipo indeterminado	?	1,55	-	2402

Anv.: Fruste (*Nummus*/AE3)

788.	-	Fruste		0,89FF	-	4002 (4)

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[13] Esta moeda foi incluída no grupo das imitações com algumas reservas. O módulo e o peso são os de um *Aes* 3, mas as marcas monetárias são próprias dos *Aes* 2 de Constantinopla.

[14] O busto parece barbado e o seu estilo é algo *bárbaro*

[15] Peça de modulo pequeno e estilo *bárbaro*.

[16] Os dois A de *Valentinianus* são abertos, sem barra horizontal. Moeda de estilo *bárbaro*.

789.	-	Fruste		1,88	-	3580
790.	-	Fruste		1,80	-	6567
791.	-	Fruste		2,20	-	2490

Anv.: Ilegível (*Nummus*/AE 3)

792.	D?	Ilegível; tipo indeterminado		0,99F	-	2614
793.	D?	Ilegível; tipo indeterminado	?	1,67	-	4001 (1)
794.	D?	Ilegível; tipo indeterminado	?	0,83F	-	2609
795.	D6?	Ilegível; tipo indeterminado	?	1,21	-	PS.B.2734.13
796.	X	Ilegível; tipo indeterminado		1,26	-	PS.B.2735.20
797.	D?	Ilegível; tipo indeterminado	?	1,76	-	2377
798.	X	Ilegível; tipo indeterminado	?	1,64	-	2379
799.	X	Ilegível; tipo indeterminado	?	1,50	-	2409

Anv.: Fruste (*Nummus*/AE4)

800.	-	Ilegível; tipo indeterminado		1,19	-	2510

Anv.: Ilegível (*Nummus*/AE 4)

801.	D?	Ilegível; tipo indeterminado	?	0,98	-	PS.B.2734.26
802.	X	Ilegível; tipo indeterminado	?	1,46	-	2383

Anv.: Ilegível (*Nummus*/AE 3-4)

803.	A/X	Fruste		1,11F	-	3993 (1)
804.	X	Ilegível; tipo indeterminado	?	0,71F	-	6576
805.	A/X	Ilegível; tipo indeterminado	?	1,49	-	2391

Anv.: Fruste (*Nummus*/AE 3-4)

806.	-	Fruste		1,14	-	2393

Anv.: Ilegível (*Nummi*/AE?)

807.	-	Fruste		0,91FF	-	8265
808.	D5	Ilegível; tipo indeterminado		1,49	-	2515
809.	D?	Ilegível; tipo indeterminado	?	0,91	-	2537
810.	?	Ilegível		?FF	-	2592
811.	D?	Ilegível; tipo indeterminado	?	1,51	-	6541
812.	X	Fruste		0,70F	-	PS.B.2735.19
813.	?			0,23FF	-	3682

Anv.: Ilegível (AE 2)

814.	D5?	Fruste		3,55	-	4408

Anv.: Ilegível (AE 4)

815.	D5	Ilegível; figura de pé ...	- -//?	1,32F	-	2562

Anv.: Fruste (*Nummi*/AE?)

816.	-	Fruste		0,70F	-	2508
817.	-	Fruste		0,87F	-	2535
818.	-	Fruste		?FF	-	2610
819.	-	Fruste		0,35FF	-	PS.2733.B5

d Os tesouros

Tesouro 1

Nº	*Busto*	*Reverso*	*Marca*	*Peso*	*Bibliografia*	*Referência*

JÚLIO CÉSAR

Casa da moeda itinerante

49-48 a.C.

Anv.: Atributos pontificais (denário)[17]

1.	-	[C]A[ESAR]; elefante para a dta. esmagando dragão		3,1	RRC 443/1	MAMM.010041

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[17] Considerando que os dois tesouros são compostos maioritariamente por sestércios, apenas as restantes denominações (denários, asses e dupôndios) são acompanhadas de indicação do valor.

MARCO ANTÓNIO
Casa da moeda itinerante
32-31 a.C.
Anv.: Ilegível, Embarcação (denários)

2.	-	[LEG] X[...]; Águia entre 2 estandartes		2,54	cf. RRC 544	8287
3.	-	Fruste		1,94	cf. RRC 544	8285

VITÉLIO
Roma
Abril-Dez 69
A VITELLIVS GERM IMP AVG TR P (denário)

4.	A2	PONT MAXIM; Vesta sentada para a dta.		2,54	RIC I 107	MAMM.010043

VESPASIANO
Roma
Janeiro -Junho 70
IMP CAESAR VES[PASIANVS AVG] (denário)

5.	A2	COS ITER TR POT; Pax sentada para a esq.		2,96	RIC II (1) 29	8282

71: 3ª emissão
[IMP CAES VESP]AS AVG P M [TR P P P COS III]

6.	A2	Ilegível; Palmeira ao centro; à esq. um cativo e, à dta., Judeia sentada sobre couraça		21,53	RIC II (1) 233	MAMM.010049,4

77-78
[CAESAR] AVG [F] DOMI[TIANVS COS V]

7.	A2	Ilegível; Annona sentada para a esq.		23,63	RIC II (1) 1040	MAMM.010049,5

TITO
Roma
80-81
IMP [T CA]ES VESP AVG P M [TR P P P] COS VIII

8.	A2e	IVD – CAP, no exergo S C; Palmeira ao centro; à esq. Judeia sentada e à dta. um cativo de pé		23,69	RIC II (1)149/151	MAMM.010049,8

DOMICIANO
Roma
90-91
IMP CAES DOMIT AVG GERM COS XV CENS PER P P

9.	A2	Imperador coroado pela Vitória; no exergo S C		22,63	RIC II (1) 703	MAMM.010049,2

NERVA
Roma
96
IMP NERVA CAES AVG P M TR P COS II P P

10.	A2	LIBERTAS PVBLICA S C; Libertas		24,57	RIC II 64	MAMM.010049,6

TRAJANO
Roma
98-99
IMP NERVA CAES TRAIAN AVG GERM P M

11.	A2	TR P COS [II] P P S C; Pax sentada para a esq.		23,13	RIC II 384	MAMM.010049,7

101-102
IMP CAES NERVA TRAIAN AVG GERM P M

12.	A3	[P M] TR POT COS IIII P P S C Concordia sentada para a esq.		23,30	RIC II 430	MAMM.010049,9

103-111
[IMP] TRAIANO [AVG GER DAC P M TR P] (denário)

13.	A4	COS V P P SPQR OPTIMO PRINC; Aequitas		2,52	cfr. RIC II 118; HCC 86[6]	8281

IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS V P P

14.	A3	SPQR OPTIMO PRINCIPI S C; Fortuna		27,39	RIC II 500	MAMM.010049.10
15.	A3	SPQR OPTIMO PRINCIPI S C; Dácio sentado para a esq., troféu		25,80	RIC II 564	MAMM.010049.1

112-117
IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS VI P P

16.	A3	[S P] Q R OPTIMO PR[INCIPI] S C; no exergo: ALIM ITAL		28,63	RIC II 604	MAMM.010049.3

98-117
Anv.: Ilegível (denários)

17.	A2	[...]; figura togada(?) para a esq., não identificada		1,59	-	8283
18.	A2?	Ilegível; figura não identificada		1,38	-	8286

Imperador e cronologia indeterminados
Anverso: Fruste (denários)

19.	-	Fruste		-	-	8279
20.	-	Fruste		-	-	8284
21.	-	Fruste		-	FF	8288

Tesouro 2

Nº	*Busto*	*Reverso*	*Marca*	*Peso*	*Bibliografia*	*Referência*

JÚLIOS-CLÁUDIOS
Casa da moeda indeterminada
Anv.: Ilegível (asse)

1.	A1?	Fruste		8,52	-	5/1

DOMICIANO
Roma
13 Setembro 81-82
[IMP CAES DIVI V]ESP F DOM[ITIAN AVG P M]

2.	A2	Ilegível; Minerva de pé para a esq.		19,65	RIC II (1) 78/105	8/2

TRAJANO
Roma
103-111
IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS V P P

3.	A4	S P Q R OPTIMO PRINCIPI S C; Salus		26,27	RIC II 515	1/9

[IMP C]AES NERVAE TRAIANO AVG GER DAC P M TR P COS V P P

4.	A4	[S P Q R OP]T[IM]O PR[INCIPI] S C; Pax		21,61	cf. RIC II 510[7]; HCC 264	6/3

IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS V P P

5.	A4	S P Q R OPTIMO PRINCIPI S C; Trajano a cavalo para a dta.		25,28	RIC II 543	4/6

112-117
IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS VI P P

6.	A4	[S P] Q R OPTIMO PR[INCIPI] S C; no exergo: [ALIM] ITAL; Abundantia		27,25	RIC II 604	3/8
7.	A4	S P Q R OPTIMO PRINCIPI S C, ALIM ITAL		25,64	RIC II 604	9/5

IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS VI P P

8.	A2	S P Q R OPTIMO PRINCIPI S C; no exergo: ARAB ADQVIS; Arabia		20,95	RIC II 614	10/7

IMP CAES NERVAE TRAIANO AVG GER DAC P M TR P COS VI P P

9.	A4	FELICIT[AS] AVGVST S C; Felicitas		24,65	RIC II 625	7/4

IMP CAES NERVAE T[RAIANO AVG GER DAC P M TR P] COS VI P P (dupôndio)

10.	A5	[FELIC]ITAS AVG[VST] S C; Felicitas		8,95	RIC II 626	2/10

PART IV

DECONTEXTUALISED FINDS

IV.1 STONES AND ARCHITECTURAL DECORATION: THE WORKED STONE

Devi Taelman

As we saw (Introduction: 5-6) systematic archaeological research in *Ammaia* since 1994 has revealed much information about the architecture and life in the ancient town. Besides the information from excavations, a large number of stone objects have been found in and around the site that provide information about the use of stone for architectural decoration in the Roman town. The assemblage of worked stones from *Ammaia* consists of granite and marble objects, many of which were reused during the construction of the eighteenth- and nineteenth-century *Quinta do Deão* farmhouse that now houses the site's archaeological museum.

The assemblage is made up of building stones of various sizes, elements of columnar architecture, millstones, epigraphic monuments, one piece of statuary and various architectonical elements. For most objects, the original context is not known.

a Building stones and various architectonical elements

Stones used for construction (49 items) dominate the assemblage. These include ashlars, square pavement blocks from the Southern Gate square and *taberna* and gate thresholds, the latter being part of one of the town gates and showing a well-developed cart rut (Fig. 201A and B).

Besides these building stones, the collection contains four granite cornice blocks, a rectangular panel of a coffered ceiling with a central rosette in high-relief surrounded by dentils (Fig. 201C), two marble plaques with moulded edges (probably part of a pedestal and later reused for the pressing mechanism of an olive press), a large veneer panel in white marble (probably used for a door threshold), and a door lintel in white marble with circular decoration.

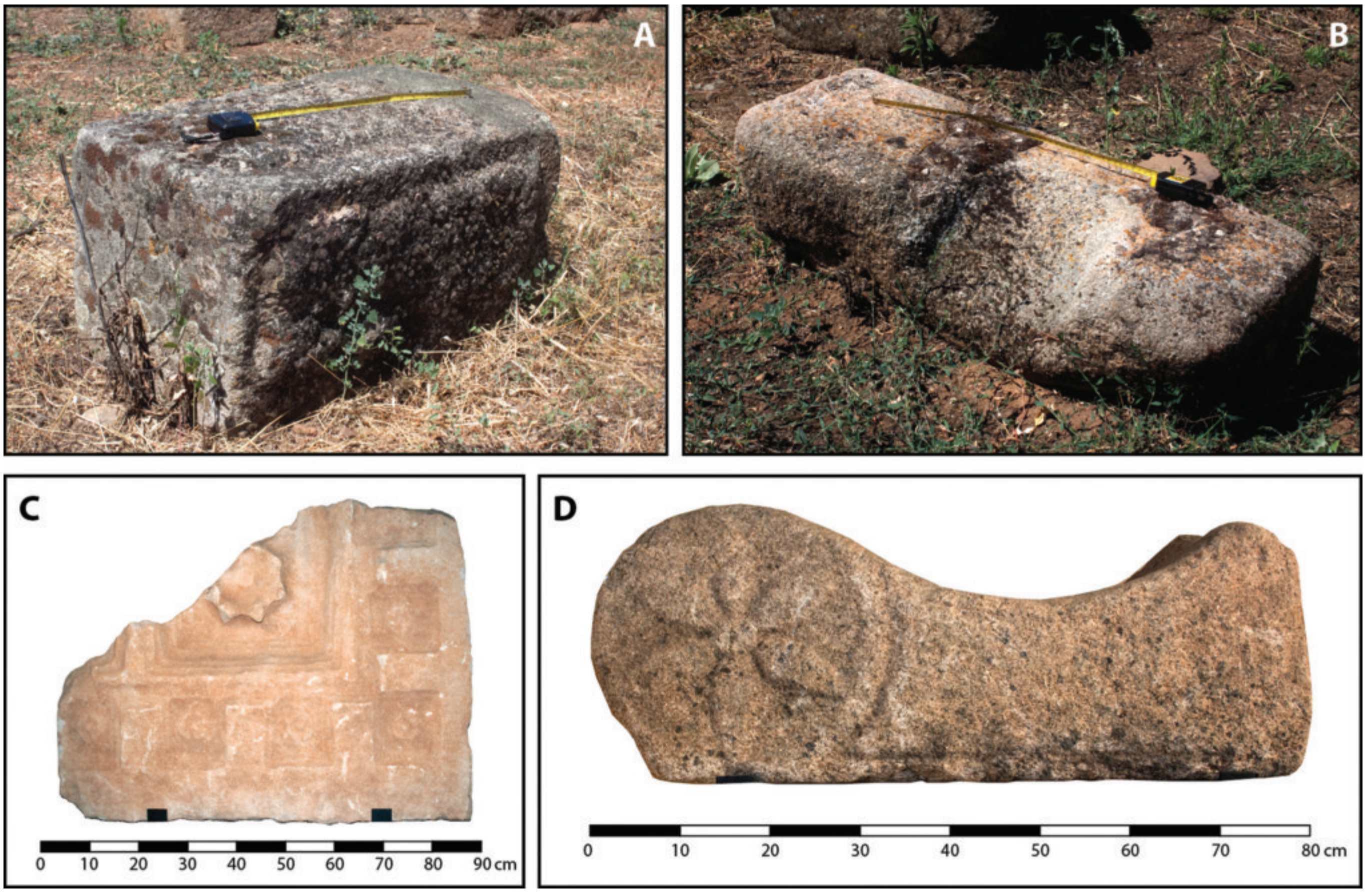

Fig. 201 Building stones and various architectonical elements from the *Ammaia* lapidary collection. A: Rusticated ashlar (lap_164) (scale: 50 cm); B: Gate threshold with well-developed cart rut (lap_159) (scale: 50 cm); C: Panel for coffered ceiling (lap_007); D: Pulvinus from *Ammaia* (lap_001).

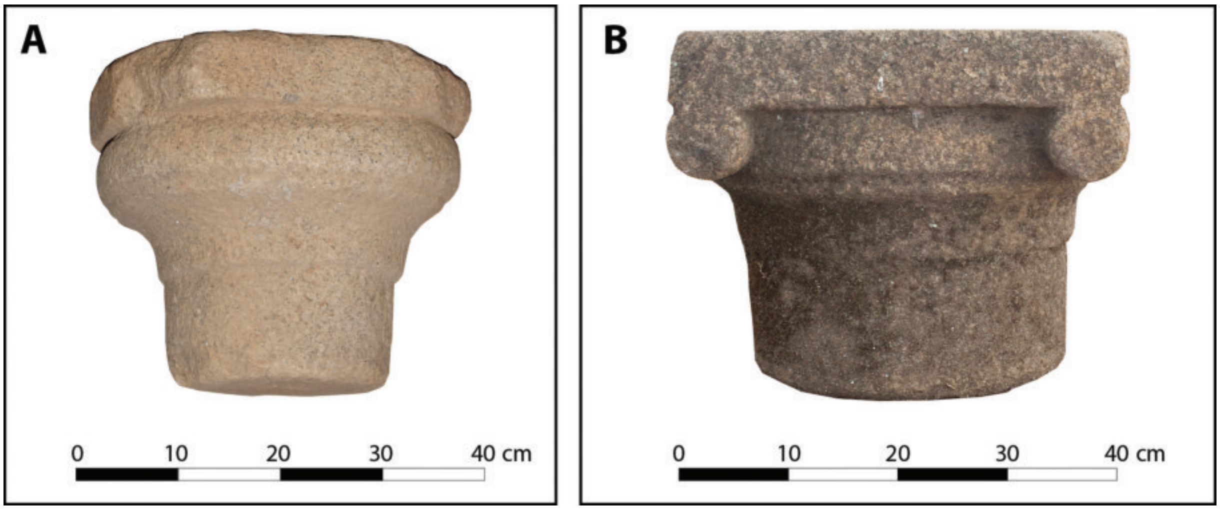

Fig. 202 Two examples of Roman capitals from *Ammaia*. A: Tuscan capital of type 2 (fer_007); B: Plain Ionic capital with Tuscan influences of type 1 (lap_041).

Finally, there is a monumental granite *pulvinus* with a lateral extension and decorated on one side with a bas-relief hexapetal rosette that was originally used for the decoration of a mausoleum (Fig. 201D). The dimensions (0.80m by 0.40m by 0.33m) and decoration of the *pulvinus* from *Ammaia* are comparable to one found in Salgueira (Fundão, Portugal), about 100 km N of *Ammaia*, as part of an altar-type funerary monument. *Pulvini* were used almost exclusively for the decoration of square or squarish mausolea constructed in *opus quadratum* (Carvalho and Encarnação 2008: 94–95). Judging from the monumental size and the construction method of the funerary monument found in the suburban zone East of *Ammaia*, it is possible that the *pulvinus* from *Ammaia* originally belonged to this building.

Besides some isolated examples such as the example from *Ammaia*, two *pulvini* collections are known from *Lusitania*: one from *Augusta Emerita* and one from *Civitas Igaeditanorum* (Beltrán 2004: 114–118, 132; Carvalho dos Santos and Carvalho 2008: 136–137). All *pulvini* belong to the same type, suggesting that they developed from the same model. According to Beltrán (2004: 128), the *pulvinus* as decorative architectonical element for mausolea was introduced in *Lusitania* by Roman colonists from the Italic Peninsula that settled in *Augusta Emerita*. In general, the *pulvini* are introduced in the province at the earliest in the Augustan period and had their largest distribution during the first century AD. From the second century AD onwards, their use started to decline (Beltrán 2004: 128).

Columns and column elements

Most columns and column elements are of granite; only few are of marble. Most of the columnar architectural elements have a plain execution, resulting from the specific working properties of the granite stone. Although granite presents excellent structural properties and is extremely suitable as building stone, the material does not allow for easy carving. As a result, simpler forms of decoration were used and the decorative elements were only executed roughly. Capitals and bases consist only of the essential components. Ornamental elements like astragals, refined volutes, and egg and dart motives are never elaborated.

Capitals

The capitals belong to the Tuscan order and the plain Ionic order with Tuscan influences. Typically, the capitals are made up of the basic capital elements, being the *abacus*, the *echinus*, the neck and the start of the column shaft. For the plain Ionic capitals with Tuscan influence, the *echinus* is decorated with two lateral *pulvini* (Fernandes 2001: 100; 2008: 238) (Fig. 202). Elements like astragals, refined volutes, and egg and dart motifs are missing. The plain Ionic capitals with Tuscan influence can be considered a more elaborated type of the regular Tuscan capital.

The assemblage consists of 30 capitals, 29 of which have been studied in detail by Fernandes (1997; 2001)[1] (Tab. 1). One recently discovered capital has been added to this overview. The capital typology presented here is based on the order, the constituting elements, shaft diameter and other dimensions, and has been taken from Fernandes (1997; 2001). Small differences in dimensions were considered with care as these often result from the stonecutting. Moreover, metrical correctness was not a primary concern for Roman architects and builders, as long as columns of the same colonnade appeared identical. Small differences in

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[1] The numbering system of the capitals adopted by Fernandes (fer_n°) was maintained here. The capital that was not described by Fernandes was named according to the other stone objects in the *Ammaia* assemblage: lap_n° (for objects in the assemblage) or dep_n° for objects in the *Ammaia* archaeological depot.

ID	Order	Type	Height	Diameter	Abacus	Echinus-Neck-Shaft	Column height
fer_001	Tuscan	T.1	52	35	52 x 52 x 9	8-11-24	327
fer_002	Tuscan	T.1	33	39	? x ? x ?	10-5-17	364
fer_003	Tuscan	T.1	?	36?	? x ? x 10	10-12-?	336
fer_004	Tuscan	T.1	36	?	39 x 39 x 6	8-8-14	?
fer_005	Tuscan	T.1	36	28	39 x 39 x 6?	8-0-14	261
fer_006	Tuscan	T.1	30	41	50 x 46 x ?	8?-7-10	383
fer_007	Tuscan	T.2	36	21	41 x 41 x 8	6-9 -13	196
fer_008	Tuscan	T.2	31	21	35 x 35 x 7	7-7-10	196
fer_009	Tuscan	T.2	30	22	37 x 37 x 7	7-7-9	205
fer_010	Tuscan	T.3	40	29	45 x 45 x 8	8-15-9	271
fer_011	Tuscan	T.?	43	22	? x ? x 7?	?-?-22	205
fer_012	Tuscan	T.4	49	49	60 x 60 x 12	10-13-14	457
fer_013	Tuscan	T.4	40	49	58 x 58 x 11	10-11-8	457
fer_014	plain Ionic	I.1	39	32	50 x 50 x 8	7-12-12	299
fer_015	plain Ionic	I.1	38	25	41 x ? x 7	6-8-13	233
fer_016	plain Ionic	I.1	38	37	52 x 52 x 8	8-8-14	345
fer_017	plain Ionic	I.1	50	34	45 x 45 x 8	7-10-25	317
fer_018	plain Ionic	I.1	36	28	44 x 44 x 8	8-10-10	261
fer_019	plain Ionic	I.1	37	28	45 x 45 x 9	8-9-11	261
fer_020	plain Ionic	I.1	37	35	55 x 53 x 8	8-10-11	327
fer_021	plain Ionic	I.1	46	37	? x ? x 8	10-14-14	345
fer_022	plain Ionic	I.1	41	38	50 x ? x 8	8-8-17	355
fer_023	plain Ionic	I.1	31	32	? x ? x 11	9-7-4	299
fer_024	plain Ionic	I.2	32	24	40 x 40 x 8	8-8-8	224
fer_025	plain Ionic	I.2	30	?	42 x ? x 7	7-6-?	?
fer_026	plain Ionic	I.2	40	?	? x ? x 9	7-5-19	?
fer_027	plain Ionic	I.3	27	40	50 x 44 x 8	10-?-?	373
fer_028	plain Ionic	I.4	28	25	35 x ? x 9	6-6-7	233
fer_029	plain Ionic	I.4	43	32	? x ? x 8	8-10-17	299
lap_041	plain Ionic	I.1	39	36?	45 x 45 x 8	10-7-14	336

Tab. 1 Dimensions (in cm) and types of capitals from Roman *Ammaia*. The last column shows the theoretical height of the columns based on the diameters of the capitals.

dimensions of the capitals often result from correcting small errors in the height of the shafts. For example, in many buildings, the *abaci* of the columns have slightly varying heights in order to compensate for small differences in the lengths of the shafts (Wilson Jones 2009: 151).

Typical for the **Tuscan capitals** from *Ammaia* is the gradual transition from *abacus* to *echinus*. The diagonal of the *abacus* and the diameter of the *echinus* have similar dimensions. Based on the dimensions and proportions of the constituting elements, four types of Tuscan capitals can be distinguished. One capital (fer_011) could not be assigned to any of these types because of its poor state of conservation.

Type 1 includes six capitals and is characterized by the absence of a listel to indicate the transition between the different components. The three capitals of type 2 differ from type 1 by the presence of a simple lintel between the *echinus* and the neck. Within type 2, a distinction can be made between capitals with a sharp curve between the *echinus* and the neck, and capitals with a more gradual curve. Type 3 is more elaborated and has simple mouldings and grooves to mark the transition between the different elements. The *echinus* is slightly torus-shaped. Type 4 is similar to type 2, but the constituting elements of the capital are separated by a small torus instead of a listel. Moreover, the *echinus* is torus-shaped and separated from the neck by a small convex moulding.

Within each type, small differences in dimensions represent designs for different colonnades. For example in type 1, capital fer_004 with a shaft diameter of 0.29m belongs to a different colonnade than fer_005 and fer_006, which have diameters of 0.43m and 0.41m, respectively.

Four types can be distinguished within the group of the **plain Ionic capitals with Tuscan influences**.

Type 1 has a well-defined *abacus*, *echinus*, neck and start of the shaft. The transition between the *abacus* and *echinus* is marked by a small groove, the transition between *echinus* and neck is formed by a moulding. Where the neck goes over into the shaft, a small kink can be observed. The *echinus* is torus-shaped or has the shape of a quarter circle. The neck starts with a smooth curve and is almost vertical. Three capitals make up type 2. The main difference with type 1 is the small diameter of the shaft compared with the diagonal of the *abacus*. Type 2 is further characterized by a pronounced separation between the *abacus* and *echinus* as well as between the neck and shaft. The neck starts with a sharp curve after which it continues virtually straight. Type 3 is similar to type 1, except that the height of the *echinus* exceeds the diameter of the *pulvini*. The type 4 capitals lack a neck and the *echinus* continues straight into the shaft.

Like for the Tuscan capitals, small differences in dimensions represent designs for different colonnades.

Based on the diameter of the shaft and using the ratios for the Tuscan order mentioned by Vitruvius (*De Architectura* IV, 7, 2–3), the original height of the columns (including base and capital) was estimated. No distinction was made between the Tuscan and plain Ionic capitals with Tuscan influence, as the latter can be considered a more elaborated type of the former. Vitruvius states that the top diameter of a Tuscan column equals 3/4 of the bottom diameter and that the bottom diameter of the shaft equals 1/7 of the height of the total column.

The average height of the columns would have been 3.02m, with a minimum of 1.96m and a maximum of 4.57m (Tab. 1). Regardless of the difficulties involved in using Vitruvius as source (see Wilson Jones 2009: 33–46) and the variations that undoubtedly existed to these ratios, the proposed theoretical column heights give a good indication of the town's columnar architecture.

Bases

Like the capitals, the granite bases (Tab. 2) are generally plain, making it sometimes difficult to distinguish between capitals and bases. Four bases consist of an *abacus*, an *echinus* (in the shape of a torus) and the start of the shaft. In one case, the *echinus* is not elaborated (lap_112). The diameter of the column shafts ranges from 0.37m to 0.42m.

Two small bases in white marble (dep_287 and dep_295) originate from the eastern half of the paved square of the Southern Gate. Both consist of an *abacus*, followed by a simple *echinus* and the start of the shaft. The latter is only 0.05m high. The diameter of both bases is 0.16m.

By applying the same ratios as described above for the Tuscan order, an average full height for the granite columns of 2.71m is estimated (Tab. 2). With these dimensions, the columns associated with the granite column bases are slightly smaller than the average estimated height of the columns associated with the capitals. The marble columns are estimated at 1.12 m, indicating that these columns were decorative architectural elements and had no proper structural use.

Shafts

In total, 29 shafts or column drums are known. Three monolithic shafts were found during the excavations of the South-

ID	Material	Height	Diameter	Abacus	Echinus	Shaft	Column height
lap_112	granite	51	38	44 x 44 x 12	/	39	266
lap_113	granite	49	38	52 x 52 x 16	7	26	266
lap_115	granite	52	37	53 x 49 x 12	11	29	259
lap_121	granite	30	?	? x ? x 7	7	16	?
lap_172	granite	60	42	63 x 60 x 13	14	33	294
dep_287	marble	12.5	16	21 x 21 x 5	2.5	5	112
dep_295	marble	?	16	?	?	5	112

Tab. 2 Dimensions (in cm) of the column bases from Roman *Ammaia*. The last column shows the theoretical height of the columns based on the diameters of the bases.

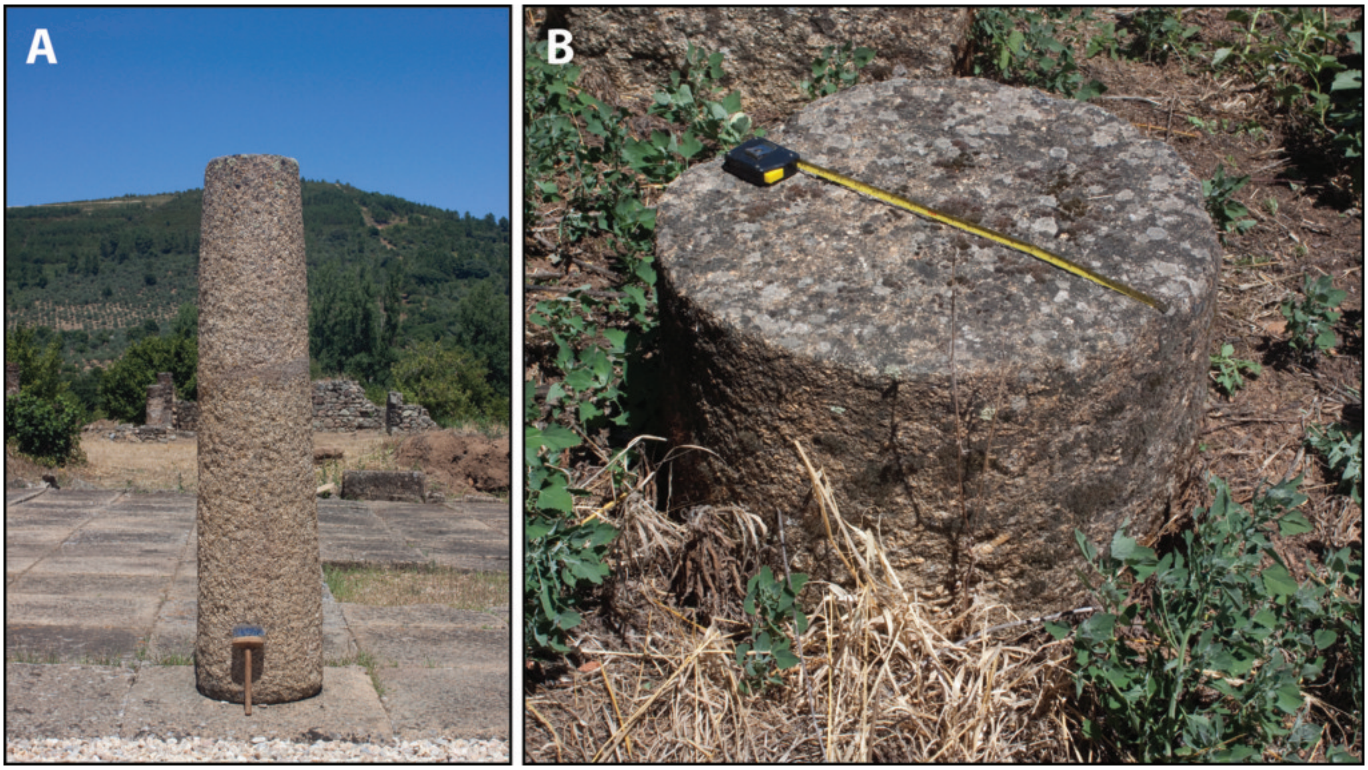

Fig. 203 A: Monolithic column shaft in granite from the Southern Gate (length brush: 30 cm); B: Granite column drum from the northwestern portico wing of the Forum (scale: 50 cm).

ern Gate, one drum comes from the northwestern wing of the Forum portico. The archaeological provenance of the remaining shafts is not known. In the area of the Forum portico, remains of brick columns were also found. Column shafts in white marble that were reused in the nearby town of Marvão are not incorporated in this overview.

Four **monolithic shafts in white marble** have diameters of 0.13m (2) and of 0.29–0.30m (2). The two shafts with the smaller diameter measure 0.93m and 0.98m in height and were used as decorative architectonical elements. The two shafts with diameters of 0.29–0.30m are preserved to a height of 0.34m and 0.77m. The marble shafts reused in Marvão belong to the same type as the latter. Seventeen **granite monolithic shafts** (Fig. 203A) range in height from 0.40m to 1.95 m, with half of the shafts measuring between 0.80m and 1.03 m. The average length is 1.01 m. The diameter is between 0.23m and 0.51 m, with an average of 0.38 m.

Six **granite column drums** (Fig. 203B), with a height smaller than or equal to the shaft diameter, have heights ranging from 0.25m to 0.45m. Their average diameter is 0.45m (range: 0.38m to 0.63m). The drum with a diameter of 0.63m and a height of 0.45m comes from the northwestern portico wing of the Forum and probably supported the portico colonnade. The assemblage also contains two **drums of engaged columns**, measuring 0.30m diameter and 0.28m high, and 0.44m diameter and 0.45m high.

By applying the same ratios as described above for the Tuscan order, a theoretical total height for the granite columns between 2.52m and 3.15m can be proposed. The largest column is estimated at 4.41m. These heights correspond well to those estimated from the measurements of the capitals and bases.

In general, the column diameter of the granite columns ranges from 0.23m to 0.63m with an average of 0.40m. Half of the columns have a diameter between 0.36m and 0.45m. With these dimensions, the columns from *Ammaia* are within the typical range of the granite columns from Roman *Hispania* (*c.* 0.40m diameter). Only rarely, the Hispanic granite columns reach over 0.60m in diameter. In other regions of the Mediterranean area, the columns tend to be slightly larger (0.50m to 0.60m diameter), for example in Cyprus and Israel. In *Leptis Magna*, the columns have an average diameter between 0.60m and 0.90m, while in Rome and Tuscany they easily reach up to 1.00m and even more (Williams-Thorpe and Potts 2002: 171; Williams-Thorpe and Rigby 2006: 90; Williams-Thorpe 2008: 82).

Pedestals

A square granite pedestal (lap_145) with plain execution, similar to that of the granite capitals and bases, measures 0.61m wide by 0.61m deep by 0.49m high. Two pedestals in white marble are more elaborated. The first marble pedestal measures 0.48m wide by 0.48m deep by 0.35m high (lap_123). The second marble pedestal with associated marble column (lap_093) was found during the excavations of the Southern Gate and measures 0.47m (W) by 0.45m (D) by 0.24m (H).

b Millstones

From the eleven millstone elements from *Ammaia*, nine are part of circular rotary querns and two are part of an hourglass-shaped or Pompeian-style mill (Fig. 204 and Tab. 3). The millstones are carved from a similar pale brown granite that is suitable for grinding because of its hard and rough surface resulting from the abundant quartz grains present in the rock. No lava querns were imported from the main production centres in the Mediterranean area (see Peacock 1980; Williams-Thorpe 1988; Williams-Thorpe and Thorpe 1989; 1991; Williams and Peacock 2006; Antonelli and Lazzarini 2010; Williams and Peacock 2011; Antonelli and Lazzarini 2012).

The rotary querns have diameters between 0.38m and 0.50m, with an average of 0.45m. The examples from *Ammaia* are slightly larger than the most popular size for rotary querns in the Roman World (0.33m to 0.36m). Larger rotary querns were generally used in Sardinia and on the Iberian Peninsula (Williams-Thorpe 1988: 260).

The Pompeian-style or hourglass-shaped mill consists of a large conical *meta* of 0.39m high with a vertical base of 0.06m high. The diameter is 0.90m. The *catillus* consists of a single ring with handle slots on either side of the upper part. This millstone belongs to the group of ring-*catillus* mills, a variation of Pompeian-style mills that occurs especially in Morocco, Portugal and Sicily (Williams-Thorpe 1988: 260). These large millstones were not only used for cereal grinding, but also for olive crushing. The ring–*catillus* mill suggests milling on industrial scale and was probably used in a large bakery or olive oil production centre.

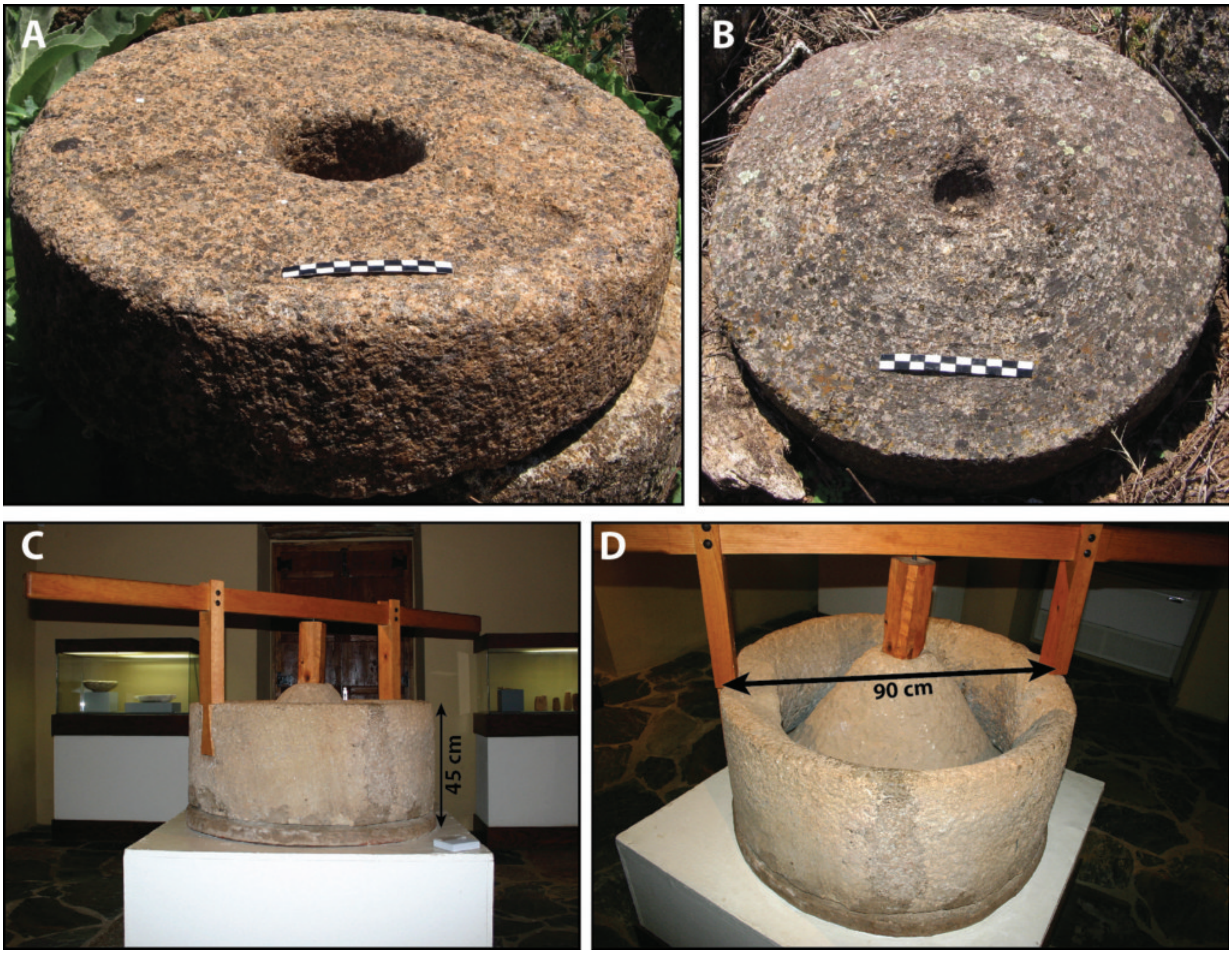

Fig. 204 Granite millstones from Roman *Ammaia*. A: *Catillus* from a rotary quern (lap_188) (scale: 10 cm); B: *Meta* from a rotary quern (lap_192) (scale: 10 cm); C and D: Pompeian style ring-*catillus* mill (lap_195 and lap_196).

ID	Type	Element	Dimensions (diameter – height)
lap_188	rotary quern	catillus	48 x 13
lap_189	rotary quern	catillus	44 x 22
lap_190	rotary quern	catillus	47 x 20
lap_191	rotary quern	catillus	50 x 25
lap_192	rotary quern	meta	38 x 12
lap_193	rotary quern	meta	45 x 20
lap_194	rotary quern	meta	46 x 11
lap_195	Pompeian style mill	meta	90 x 45
lap_196	Pompeian style mill	catillus	90 x 39
lap_197	rotary quern	meta	44 x 11
lap_198	rotary quern	catillus	44 x 14

Tab. 3 Millstones found in Roman *Ammaia* (Dimensions are in cm).

c Epigraphic monuments

The epigraphic collection from *Ammaia* contains 25 monuments made of either pale brown granite (14 objects) or white marble (11 objects) (Tab. 4). Twenty-two are in the *Ammaia* archaeological museum, three are in the Museu Nacional de Arqueologia in Lisbon, and three are now lost but were documented in the past. The monuments can be classified in three distinct categories: tombstones (13), dedicatory inscriptions to deities (8), and commemorative inscriptions for emperors (2). Two fragments could not be assigned, because an insufficient amount of the original stone was preserved.

Only two monuments can be dated precisely by the imperial titulature in the inscribed text. The dates for the remaining monuments can be approximated using palaeographic evidence together with some indications from the inscription (Mantas 2012a: 14–17). For example, the tombstone of C. Iulius Vegetus (*CIL* II 160, IRCP 617), a provincial *flamen* of the imperial cult, can be dated in the post-Vespasian period because of the typical formulation of *flamini provinciae Lusitaniae* (Delgado Delgado 1999: 441). Similarly, the tombstone of P. Cornelius Macer (*CIL* II 159, IRCP 618) is dated in the post-Claudian period because the inscription refers to *Divus Claudius* (i.e. later than AD 54). The monuments are mainly dated in the second half of the first century AD and the first half of the second century AD, with a concentration in the Flavian and early Antonine period. The earliest marble monument with a precise chronology dates to AD 44–45, thus providing a *terminus ante quem* for the introduction of white marble in *Ammaia*.

Generally, the manufacture of the monuments is of a high standard and quality of finish. The marble monuments are always smoothed and polished. The carving was well executed and the lettering was adapted to the available space. In a few cases, the incorrect splitting of words (for example, lap_014: *liben-s*, lap_016: *Meduge-ni*), words crossing the raised border of the epigraphic field (for example, lap_029: *STTL*), or a reduced letter size at the end of the lines (for example, lap_016), reflect the work of an inexperienced sculptor or a sculptor unfamiliar with the Latin language.

The first type of epigraphic monuments are **funerary inscriptions** on simple, elongated granite stelae with rounded tops or triangular pediments. This group is represented by six pieces. None are complete; the top part is missing on each (Fig. 205A). Eighteenth-century drawings show that at least three of these stelae ended in a rounded top. Four of the six granite tombstones were also decorated in the upper part with a bas-relief rosette (Abascal and Cebrián 2009: 23–24, 28). The epigraphic field is generally enclosed by a raised border. These funerary monuments have many parallels in Roman *Hispania* and in Late Republican and Early Imperial Rome (Edmondson 2001: 383; 2002: 52–53; 2007: 462–464). The stelae with rounded tops and a rosette decoration are typically found in indigenous contexts in *Augusta Emerita* and north of the Tagus River in central *Lusitania* (Edmondson 2002: 53–54; 2007: 465–466; Márquez Pérez, Sanchéz Barrero and Edmondson 2008: 514–516).

A second group of inscribed tombstones are those carved in white marble. These monuments are more elaborated and display a greater typological diversity than their granite equivalents. Three of the seven marble funerary monuments are unfortunately lost. For two monuments (unknown_005 and unknown_006), only the inscribed text has been documented. Information regarding the third monument (unknown_003) comes from a nineteenth-century description. It concerns an altar-type monument of approximately 2m to 2.5m high. The central part of the block contained the inscription. The square base and capital were separated from the central shaft by a moulded decoration (Stylow 2009: 36, 44–45). Three funerary inscriptions

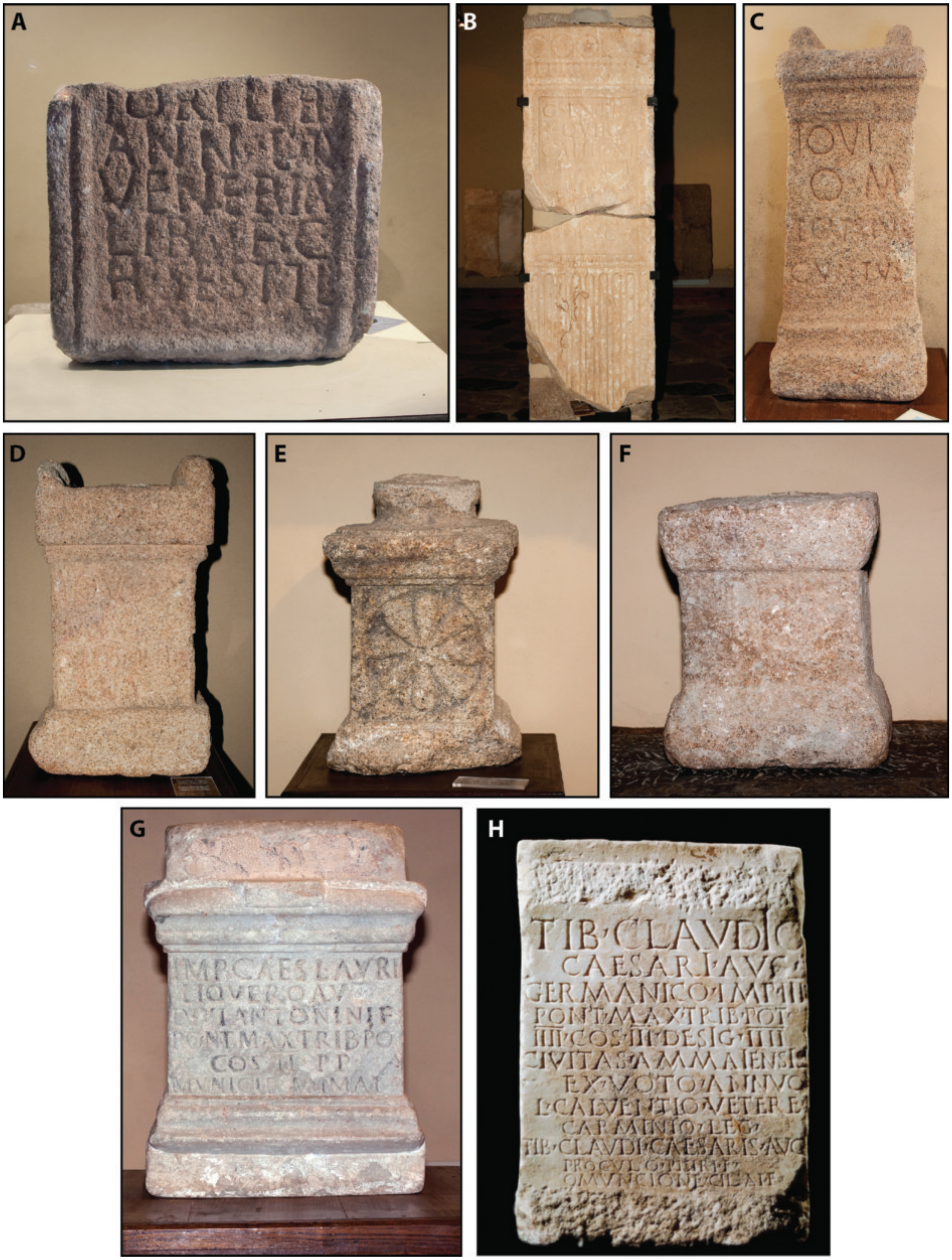

Fig. 205 Epigraphic monuments from *Ammaia*. A: Funerary epigraphic monument of the stele type in granite (lap_029) (height: 36cm); B: Funerary epigraphic moment of the stele type in white marble (lap_033) (height: 185cm); C: Granite altar dedicated to Jupiter Optimus Maximus (lap_018) (height: 96cm); D: Granite altar dedicated to Jupiter Optimus Maximus (lap_026) (height: 59cm); E: Uninscribed altar with rosette decoration (lap_006) (height: 36cm); F: Semi-finished altar (lap_013) (height: 35cm); G: Commemorative inscription in white marble dedicated by the inhabitants of *Ammaia* to Emperor Lucius Verus in AD 166 (lap_020) (height: 48cm); H: Commemorative inscription in white marble, dedicated to Emperor Claudius in AD 44–45 (height: 45cm) (MNAE E 7267, Museu Nacional de Arqueologia, Lisbon) (Mantas 2000: 410).

(lisbon_06, lap_019 and lap_024) are carved on thin marble panels designed for insertion into the façade of a larger funerary monument. A large marble stele (1.85m high) (lap_033) was decorated with five rosettes and a leaf-like frieze on the top, followed by the framed epigraphic field. The bottom decoration resembles a pilaster and consists of nine elongated grooves (Mantas 2000: 403; *Archivo Epigráfico de Hispania* 2007: 378–379) (Fig. 205B).

The **religious, dedicatory inscriptions on altars** are all carved in granite. Typologically, all monuments are similar and resemble rectangular miniature pillars with a clearly marked moulded base and capital, a common shape for private altars (Keppie 1991: 93). Two cylindrical *pulvini* with a circular front decorate both sides of the capital. In half of the pieces, a central *foculus* was carved to contain the offers. The text is inscribed on the shaft. Based on the size of the monuments, two groups can be distinguished: the large altars with heights between 0.81m and 0.96m (three monuments) and the small altars with heights between 0.41m and 0.59m (five monuments) (Figs. 205C and D). The smaller altars were probably used in household shrines, while the larger monuments could have been placed inside a temple.

Four altars are dedicated to Jupiter. In three cases, the god is given the epithet of *Optimus Maximus*, 'Best and Greatest'. This again indicates the importance of the Jupiter cult in *Lusitania*, especially in its interior part (Mantas 2000: 405; Beltrán Lloris 2002: 105). On two altars, the text refers to the *genius* of the town (*Genius Ammaiensis* and *Genius oppidum constitutum*). One altar refers to the indigenous cult of Ocrimira, a local goddess probably related to water (Mantas 2000: 406). On one altar, the name of the god or goddess could not be determined. Among the religious, dedicatory inscriptions are also two uninscribed altars (Figs. 205E and F). One was decorated with a central rosette and a moulded base and capital. On the capital, a central *foculus* was carved for holding the offers. The other was not fully finished and illustrates that *Ammaia* had its own workshop(s) for epigraphic monuments in granite. While the general shape and layout of the altar are already elaborated, the fine carving of the moulded base and top and the inscribed text have yet to be executed.

Finally, two **commemorative inscriptions** from *Ammaia* are carved in white marble. The first commemorative inscription honours Emperor Lucius Verus and was dedicated by the town of *Ammaia* and its inhabitants (Fig. 205G). It is inscribed on a small polished pedestal with a moulded base and capital. On the top, a hole with remains of an iron dowel suggests that a bust was originally inserted into the monument. The second monument, now stored in the Museu Nacional de Arqueologia in Lisbon (MNAE E 7267), contains an annual vow of two local magistrates to Emperor Claudius (Fig. 205H). The commemoration is inscribed on a marble slab of 0.18m thick and is smoothed on three sides. The top and bottom part were originally decorated with a moulding (IRCP: 676). The stone was probably designed for insertion into the base of a monument. According to J.M. Højte (2003: 303) the block is too small for a statue base and could perhaps have held a bust.

d Statuary

A life-size togate statue in white marble, now displayed in the *Ammaia* archaeological museum, is the only piece of sculpture known from the site. It was discovered as part of a nineteenth- and twentieth-century fountain in the nearby village of Escusa. Apart from this piece, many other statues certainly embellished Roman *Ammaia*. As discussed in the introduction, the Spanish historian J. De Viu (1852: 243–244), for example, mentions the shipping of 'more than twenty beautiful statues' to England.

The togate statue of *Ammaia* represents a young boy dressed in a *toga praetexta* and wearing a *bulla*, an amulet worn by male children until they received the *toga virilis* and were considered mature. The statue is missing the head, the right forearm and the left hand. A large circular hole also cuts through the lower half of the torso. The right arm is raised and bends at the elbow, the sleeves of the *toga* reach the elbow. The left hand is next to the body and the *toga* is thrown over the arm. The *toga* extends in a U-shaped *umbo* and the *sinus* extends below the right knee. The figure places its weight on the left foot, while the right leg is slightly bent at the knee (Fig. 206A).

The maximum preserved dimensions are 0.91m (height), 0.60m (width) and 0.32m (depth). Comparison with parallels *infra* suggests that the statue had an original height of about 1.50m. The reduced depth of the piece and the unelaborated rear side suggest that the figure was designed to be placed in a niche or against a wall from where the back was not visible. The head, the right arm and the left hand were carved from a separate blocks of marble. The latter two were attached to the torso by iron dowels; remains can still be seen in the torso block. The head was inserted into a socket.

Even though the head of the togate statue is not preserved, a comparison with similar pieces and the high-quality carving suggests a Julio–Claudian chronology. The link between *Ammaia* and the Claudian family has already been attested by two honorific inscriptions: (1) an annual vow of the town's inhabitants dedicated to Emperor Claudius in AD 44–45 (IRCP 615) (Vasconcelos 1935; IRCP: 676–677; Mantas 2012a: 15); and (2) a funerary inscription of P. Cornelius Macer (*CIL* II 159, IRCP 618), a member of the local

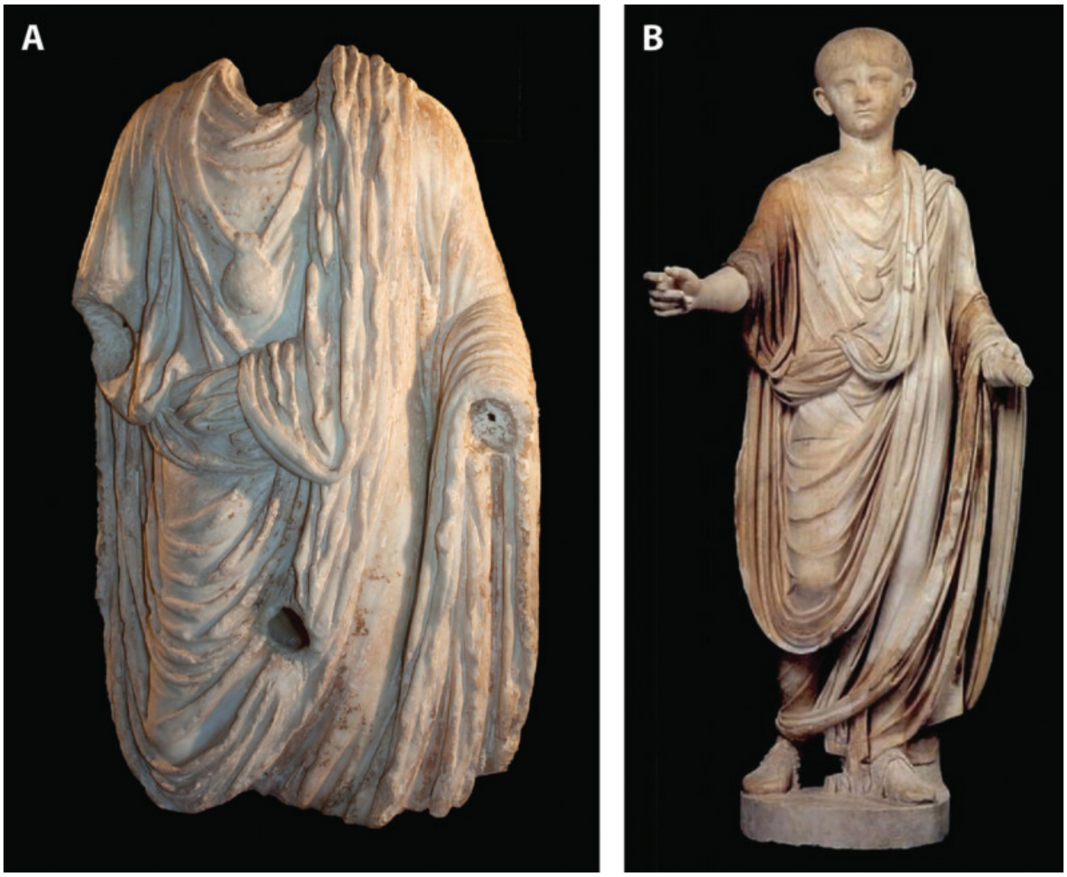

Fig. 206 (A) Togate statue of *Ammaia*, representing the 13-year-old Nero (AD 50) (*Ammaia* archaeological museum, São Salvador da Aramenha) (height: 91 cm); (B) Togate statue of young Nero from the basilica in *Veleia* (MA 1210 – inv. no. 337, N1580, Louvre, Paris) (Giroire and Roger 2007: 81).

Ammaia magistracy, who was given Roman citizenship by Claudius, probably as one of the first people in the town (IRCP: 679; Edmondson 2006: 256; Stylow 2009: 50; Mantas 2012a: 15).

Based on this chronology, the figure can be identified as the young prince Nero or his stepbrother Britannicus. Comparison with other togate statues with a *bulla* from Julio–Claudian groups, such as the one from *Veleia* (Lugagnano Val d'Arda, Italy) or *Rusellae* (Roselle, Italy) (Poulsen 1928: 48–49; Poulsen 1951: 121–122; Hiesinger 1975: 116; Kleiner 1992: 135; Nogales Basarrate 2008: 680–682) suggests the young prince Nero (Fig. 206B). The argument of *damnatio memoria* by Oliveira (1991: 94) to identify the figure with Britannicus needs to be treated with caution. The author states that the description of Viu (1852: 244) mentions that the statue still had a head when it was discovered in Escusa, making it impossible that the figure represents Nero as all imagery of the emperor was destroyed after his death in AD 68. However, the imagery of condemned emperors was not always destroyed. In many cases, portraits were recarved or removed from public display (Kleiner and Matheson 1996: 63; Varner 2004: 2, 5). Also, in the context of dynastic groups, the presentation of the genealogy of the imperial family was considered more important than the *damnatio*, especially if the person was not yet emperor at the time of depiction (Varner 2004: 7, 80). This is for example illustrated by the Julio–Claudian dynastic groups of *Veleia* and *Rusellae*, where the statues of the young Nero were never removed (Wood 2000; Varner 2004: 79–80).

If the figure represents Nero, it must date to before AD 51, when the prince was granted the *toga virilis*. The statue from *Ammaia* therefore belongs to the earlier portrait types of the later emperor that were erected to celebrate the adoption of Nero by Claudius and his designation as official heir to the throne in AD 50 (Hiesinger 1975: 113, 118; Højte 2003: 374). In its ancient setting, the figure from *Ammaia* must have belonged to a statuary group dedicated to the *Gens Augusta*. These statuary groups were a popular iconographic programme in the western Iberian in the Claudian period (Gonçalves 2007: 554–555). Some of the sculptures referred to by Viu (1852: 244) might have been part of this group.

IV.2 THE AMPHORAE

Caterina P. Venditti

The data are presented here according to the following order: inventory number, object, dimensions, description, production, contents, fabric colour, fabric description, date-range, references.

The inventory number is composed on the basis of the: location (AMM), year (0000), sector (B), square (0000), internal progressive number. For the encoding of colours, we refer to Munsell 1994. Dimensions are given in centimetres.

AMM.82 Rim, neck and attack of the handle (Fig. 207)
Diameter 8.6, height 7.6; thickness 1.6, width 4.8. Thickish everted rim, long neck, grooved handle. Production: local production (?). Fabric colour: core dark brown; ext. surf. brown/orange. Visual characteristics: very hard, harsh coarse fabric. Abundant ill-sorted and variable size inclusions: white sub-angular grains (limestone), black, grey inclusions and sparse brown grains.

AMM1995D.51 Rim and attack of handle (Fig. 208)
Diameter 11.4; height 4.1; handle thickness 1.4, width 4.6. Everted lip joined to a small handle, elliptical section. Short neck. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 10R6/16; ext. surf. 5YR7/10 5YR7/12. Visual characteristics: very hard, harsh coarse fabric. Abundant ill-sorted and variable size inclusions: white subangular grains (limestone), black, grey inclusions and sparse brown grains.
Date range: third - fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM1995D.52 Wall with attack of handle (Fig. 209)
Thickness wall 1-1.8. Wall with attack of handle. Production: Tejo/Sado valleys. Fabric colour: core 5YR7/2; ext. surf. 5YR7/6 5YR7/8. Visual characteristics: soft, rough coarse fabric. Moderate frequency of ill-sorted and variable size inclusions: white subangular grains (limestone), red sub-rounded, black, grey inclusions and sparse brown grains.

AMM1995D.53 Wall with attack of handle
Wall thickness 0.9-1.2. Wall with attack of handle. Production: Tejo/Sado valleys. Fabric colour: core 5YR6/12; ext. surf. 7.5YR7/8, 7.5YR7/10, 7.5YR7/12. Visual characteristics: soft, smooth coarse fabric. Abundant ill-sorted and variable size inclusions: white large size subangular grains (limestone), red large size subangular grains, black and grey small size inclusions and sparse subangular brown grains.

AMM1995A.54 Rim and handle (Fig. 210)
Diameter 11; height 4; handle thickness 2.8, width 4.1. Everted rim and part of the elliptical handle. Classification: Keay XVI. Production: Tejo/Sado valley. Contents: fish-products. Fabric colour: core 10R6/16; ext. surf. 7.5YR7/8, 7.5YR7/10. Visual characteristics: soft, smooth coarse fabric. Abundant ill-sorted and variable size inclusions: white small size sub-rounded grains (limestone), black and grey small size sub-angular grains, sparse brown sub-angular grains. Date range: third - (early) sixth century AD. References: Keay 1984: 149-155; Bernal Casasola 2000: esp. 281; Almeida and Raposo 2014b.

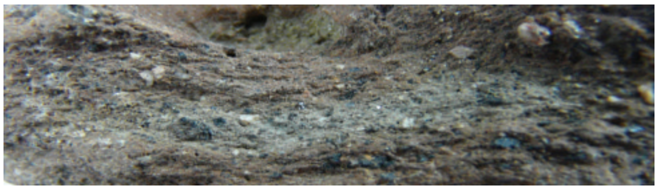

Fig. 207 No. inv. AMM.82: the fabric.

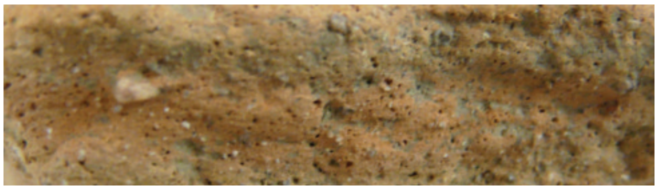

Fig. 208 No. inv. AMM1995D.51: the fabric.

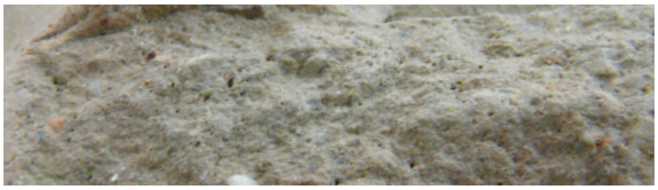

Fig. 209 No. inv. AMM1995D.52: the fabric.

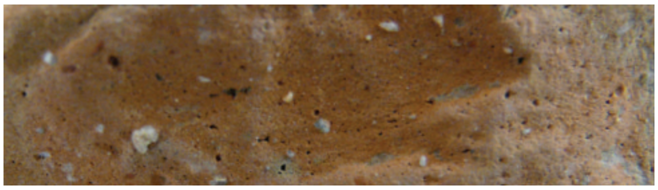

Fig. 210 No. inv. AMM1995A.54: the fabric.

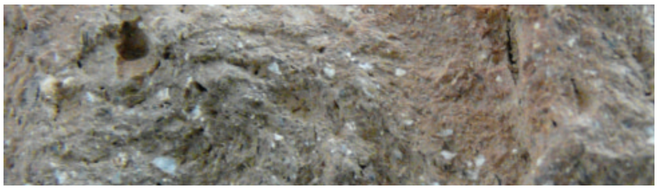

Fig. 211 No. inv. AMM1995D.55: the fabric.

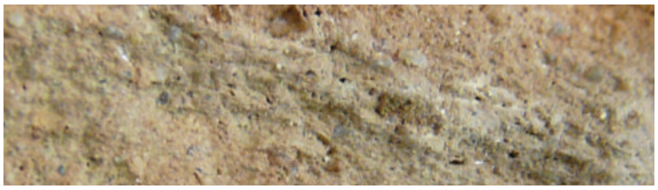

Fig.212 No. inv. AMM1995B.56: the fabric.

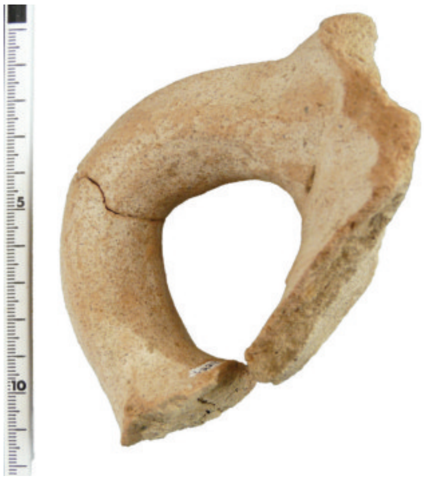

Fig. 213 Two fragments reassembled of curved circular handle of Dressel 23 (no. inv. AMM1995B.57).

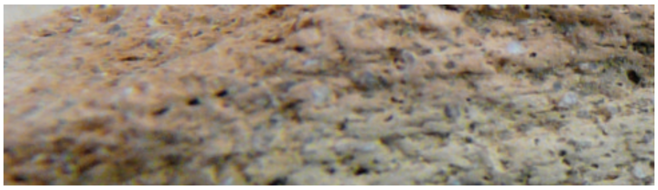

Fig. 214 No. inv. AMM1995B.57: the fabric.

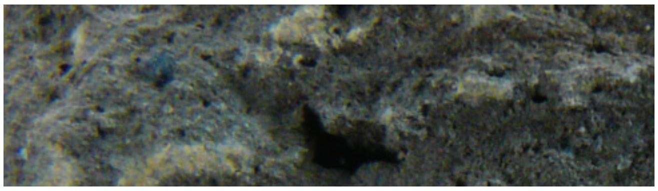

Fig. 215 No. inv. AMM1997.3: the fabric.

AMM1995D.55 Neck and handle (Fig. 211)
Height 10.2; handle thickness 2.4, width 5.7; wall width *c.* 0.8-1.1. Part of the neck and attack of the bifid handle. Classification: similar to Dressel 2-4. Production: local production (?). Contents: wine. Fabric colour: core 7.5YR4/6; ext. surf. 10R4/10. Visual characteristics: hard, rough coarse fabric. Abundant ill-sorted and variable size white, black and grey inclusions. Date range: 70 BC - early third century AD (?).

AMM1995B.56 Rim and handle (Fig. 212)
Thickness 1.7, width 4.1. Everted rim, grooved handle with elliptical section. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish sauce. Fabric colour: core 2.5YR4/2 2.5YR4/4; ext. surf. 2.5YR5/8, 2.5YR5/10. Visual characteristics: hard, rough coarse fabric. Abundant ill-sorted and variable size white, red, black and grey inclusions. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1995B.57 Handle (Figs. 213, 214)
Diameter unspecified; handle thickness 2.4, width 3.4. Curved handle nearly circular in section. Two fragments reassembled. Classification: Dressel 23. Production: Guadalquivir valley (?). Contents: olive based products. Fabric colour: core 5Y7/6, 2.5YR6/10; ext. surf. with a yellowish/ white engobe. Visual characteristics: very thick, rough sandy fabric, usually buff (7.5YR 7/4), light reddish-brown (2.5YR 6/4) or grey (7.5YR N6/) in colour, sometimes with a salt-whitened surface. Date range: (late) third - century sixth AD. References: Remesal Rodríguez 1983; Peacock and Williams 1986: 141; Berni Millet 1998; Carreras Monfort 2005c; Berni Millet and Moros Díaz 2012.

AMM1995B.58 Attack of handle
Handle thickness 1.4, width 3.7. Attack of handle. Fabric colour: core 5Y3/2; ext. surf. 10R4/12. Visual characteristics: hard, rough fabric, with abundant white and grey medium-size grains, few small-size black and grey grains.

AMM1997.1 Handle
Thickness 1.8, width 4.6. Handle elliptical in section, probably joined to the rim. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys. Contents: fish products (?). Fabric colour: core 7.5YR7/10; ext. surf. 2.5Y8/10. Visual characteristics: hard, rough coarse fabric. Abundant ill-sorted variable size inclusions: white (limestone), grey, red (iron?), brown, black grains. Date range: third – (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.2 Base
Max height 4.3; wall thickness 0.6. Short solid spike. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys. Contents: fish products (?). Fabric colour: core 7.5YR7/8; ext. surf. 2.5Y7/8. Visual characteristics: hard, rough coarse

fabric. Abundant ill-sorted variable size inclusions: white (limestone), grey, red (iron?), brown, black grains; quartz? Date range: third – (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.3 Rim and attack of the handle (Fig. 215)
Diameter 14; wall thickness 0.8; handle thickness 1.1, width 4.5. Everted rim and attack of the handle with three grooves. Classification: Imitation of Almagro 51 c (?). Production: local production (?). Contents: fish products (?). Fabric colour: core 2.5Y4/2; ext. surf. 2.5Y5/4. Visual characteristics: hard, smooth coarse fabric. Moderate frequency of ill-sorted variable size inclusions: white (limestone), grey, brown, black grains. Date range: third – (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.4 Shoulder and attack of the handle
Wall thickness 0.8; handle thickness 1.3, (max) width 4.8. Elliptic handle with two grooves. Production: Tejo/Sado valleys. Fabric colour: core 7.5YR6/2, 7.5YR7/8; ext. surf. 2.5Y8/10. Visual characteristics: soft, smooth coarse fabric. Moderate frequency of ill-sorted variable size inclusions: grey, red-brown, white grains.

AMM1997.5 Base
Max height 2; base diameter 6.5. Ringed base. Classification: Gauloise 4 (?). Production: Narbonne region (?). Contents: wine (?). Fabric colour: core 7.5Y8/6; ext. surf. 7.5YR 8/4–7/4 (buff). Visual characteristics: soft smooth fabric, with fine texture; moderate frequency of well-assorted and variable size black and brown inclusions and quartz. The fracture is smooth to irregular, while the surfaces are rough. Date range: 50 AD - (end) third century AD (?). References: Laubenheimer 1985; Peacock and Williams 1986: 142-143; Laubenheimer 2001b; Laubenheimer and Gisbert Santonja 2001; Laubenheimer 2005; Laubenheimer and Schmitt 2009.

AMM1997.6 Rim
Diameter 15.8; height max 5.7; wall thickness 1.1; handle thickness 2.2, width 4.9. Everted lip, joined to a small ovoid section handle. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core 5YR6/12; ext. surf. 10YR7/10. Visual characteristics: hard-fired, rough-harsh coarse fabric. Abundant ill-sorted variable size inclusions: subangular grey grains, dark-red subangular grains, limestone. Date range: third - fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM1997.7 Shoulder and part of the handle
Wall thickness 1; handle thickness 1.4, *c.* width 3.5. Shoulder and part of the ovoid section handle. Production: Tejo/Sado valleys. Fabric colour: core 10YR6/2; ext. surf. 10YR6/6. Visual characteristics: hard-fired, rough-harsh coarse fabric. Abundant ill-sorted variable size inclusions: subangular grey grains, dark-red subangular grains, limestone.

AMM1997.8 Rim and handle
Handle thickness 2, width 4.4. Everted rim and elliptical handle. Classification: Almagro 50 (similar). Production: local production (?). Contents: fish products. Fabric colour: core 7.5YR4/2; ext. surf. 7.5YR5/6. Visual characteristics: hard-fired, harsh coarse fabric. Very abundant frequency of ill-sorted variable size inclusions: subangular grey grains, dark-red and brown subangular grains, limestone. Date range: third - fifth century AD. References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1997.9 Rim and handle
Diameter 14; wall thickness 0.9 to 1.1; handle thickness 2.2, width 4.2. Jutting triangular-shaped rim, ovoid section handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR7/2; ext. surf. 7.5YR7/6. Visual characteristics: hard-fired, smooth coarse fabric. Sparse frequency of well assorted small-size inclusions: subangular grey grains, dark-red and brown subangular grains, black grains, limestone; in the core one large size red-brown grain. Date range: third - fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.10 Base (Fig. 216)
Max height 4.3; wall thickness 0.8. Solid short spike. Production: Tejo/Sado valleys. Fabric colour: core 7.5YR7/10; ext. surf. 7.5YR7/8 7.5YR7/10. Visual characteristics: hard-fired, rough coarse fabric. Sparse frequency of well assorted small-size inclusions: subangular grey grains, dark-red and brown subangular grains, black grains, limestone.

AMM1997.11 Rim (Fig. 217)
Wall thickness 0.5; max height 2.9. Jutting triangular-shaped rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR7/10; ext. surf. 7.5YR6/10. Visual characteristics: hard-fired, rough coarse fabric. Abundant well assorted medium and small-size inclusions: subangular grey grains, dark-red, red and brown subangular grains. Date range: third - fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.12 Handle
Thickness 1.5, width 4. Curved handle with groove in the centre. Production: Tejo/Sado valleys. Fabric colour: core 10YR4/4; ext. surf. 7.5YR6/6. Visual characteristics: hard-fired, smooth coarse fabric. Sparse frequency of well assorted small-size inclusions: of grey, brown and white grains.

AMM1997.13 Rim and handle (Fig. 218)
Diameter 8.4; handle thickness 1.4, width 4.1. Triangular rim and grooved handle that curves from the rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys (?). Contents: fish-sauce. Fabric colour: core 7.5YR3/2; ext. surf. with burnt glaze (?). Visual characteristics: hard-fired, rough-harsh coarse fabric. Abundant ill-sorted medium-size inclusions of grey, brown and white (limestone?) grains. Date range: third - fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.14 Rim and attack of the handle (Fig. 219)
Diameter 9.6; wall thickness 0.8; max height 5. Rounded rim and attack of the handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR6/2; ext. surf. 7.5YR7/10. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium and small-size inclusions of grey, brown and white (limestone?) grains; few red-orange inclusions on the external surface. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

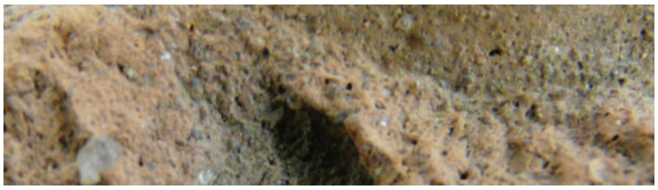
Fig. 216 No. inv. AMM1997.10: the fabric.

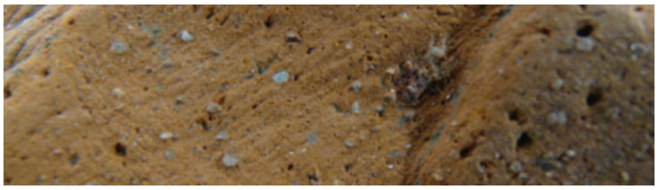
Fig. 217 No. inv. AMM1997.11: the fabric.

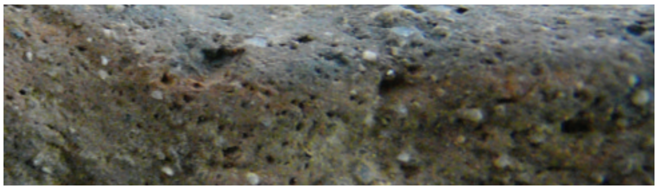
Fig. 218 No. inv. AMM1997.13: the fabric.

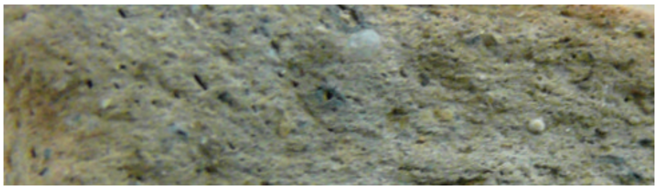
Fig. 219 No. inv. AMM1997.14: the fabric.

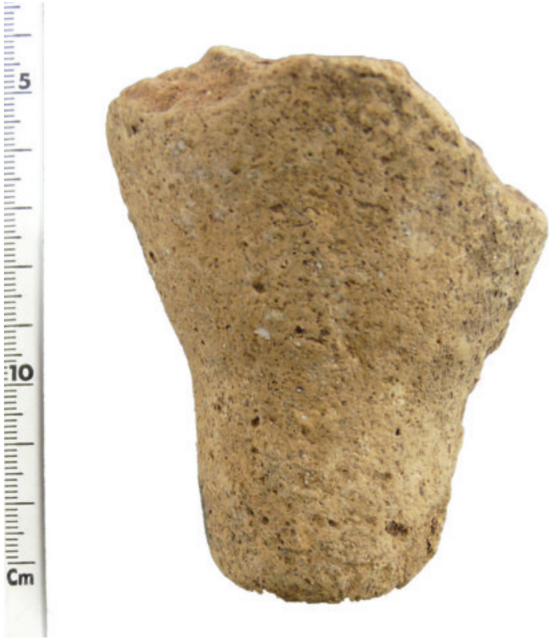

Fig. 220 Short hollow base of Amagro 51 c (no. inv. AMM1997.16).

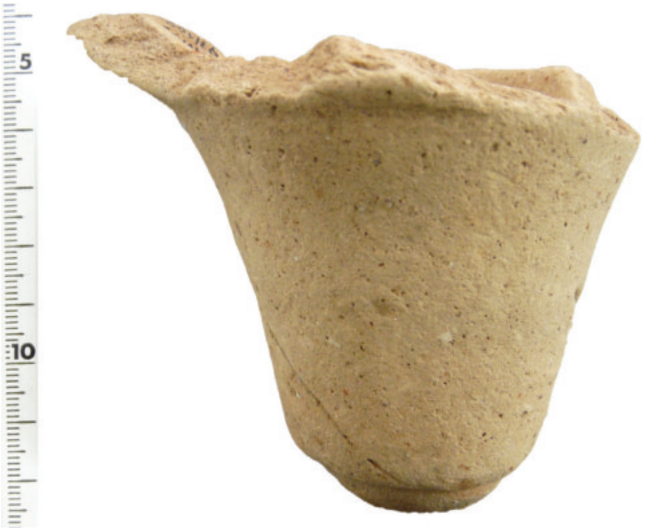

Fig. 221 Short hollow base of Dressel 14 (no. inv. AMM1997.17).

AMM1997.15 Handle
Thickness 2.1, width 4. Vertical handle with one groove in the centre. Production: Tejo/Sado valleys. Fabric colour: core 7.5YR6/2; ext. surf. 7.5YR7/10. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium and small-size inclusions of grey, brown and white (limestone?) grains; few red-orange inclusions on the external surface.

AMM1997.16 Base (Fig. 220)
Wall thickness 1; max height 7.3. Short hollow base. Classification: Almagro 51 c. Production: Tejo/Sado valley or Algarve (?). Contents: fish-sauce. Fabric colour: core 7.5YR5/6; ext. surf. 7.5YR7/10. Visual characteristics: hard-fired, rough-harsh coarse fabric. Abundant ill-sorted medium and small-size inclusions of grey, black, brown and white (limestone ?) grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.17 Base (Fig. 221)
Thickness 1.1; max height 7.9. Short hollow base. Classification: Dressel 14. Production: Tejo/Sado valley or Algarve (?). Contents: fish-sauce. Fabric colour: core 10YR8/6; ext. surf. 2.5Y8/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, black, brown and white (limestone?), red-orange grains; quartz? Date range: Claudian period - early third century AD. References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Mayet 1990: *passim*; Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim*, 2008, *passim*; Raposo and Viegas 2013.

AMM1997.18 Handle
Thickness 2.5, width 2.8. Ovoid section handle, with one groove. Fabric colour: core 2.5Y4/4; ext. surf. 10YR5/6. Visual characteristics: hard-fired, rough coarse fabric. Very abundant ill-sorted large and medium-size inclusions of grey, black, brown and white (limestone?) grains.

AMM1997.19 Base
Thickness 2.5, width 2.8. Solid short spike. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 10YR7/8; ext. surf. 10YR7/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted large and medium-size inclusions of grey, red-brown and white (limestone?) grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.20 Handle
Thickness 1.5 (max), width 4.6. Vertical grooved handle (one groove). Production: Guadalquivir valley or local production? Fabric colour: core 10Y4/2; ext. surf. 7.5YR5/8. Visual characteristics: hard-fired, harsh coarse fabric. Very abundant ill-sorted variable size inclusions of grey, brown and white (limestone?) grains.

AMM1997.21 Rim and handle
Diameter 9; handle thickness 1.4, width 4.1. Rounded rim and vertical handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 10YR8/4; ext. surf. 2.5Y7/6. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black and white (limestone?) grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.22 Rim and handle (Figs. 222, 223)
Diameter *c.* 13.2; max handle thickness 3, width 3. Short triangular rim just beneath which is one small oval handle, a bulbous. Classification: Dressel 23. Production: Guadalquivir valley. Contents: olive based products. Fabric colour: core 7.5YR6/2, 7.5YR7/8; ext. surf. 10Y9/4. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted small-size inclusions of grey, brown, red and white (limestone?) grains. The fresh fractures show a dark central core sandwiched between lighter zones. Date range: (late) third - (mid) sixth century AD. References: Remesal Rodríguez

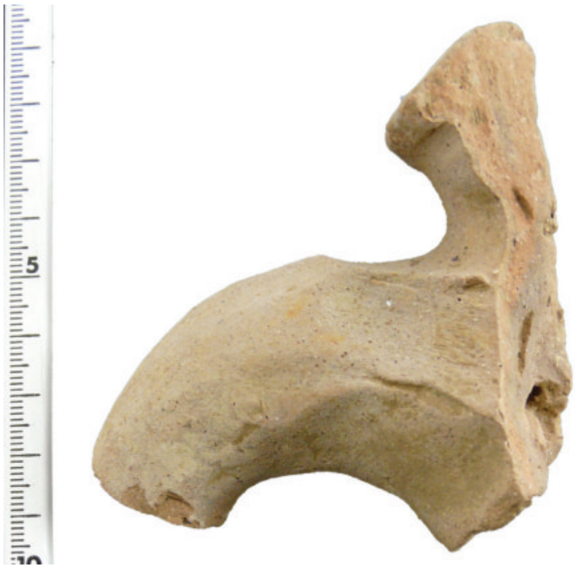

Fig. 222 Short triangular rim and handle a bulbous of Dressel 23 (no. inv. AMM1997.22).

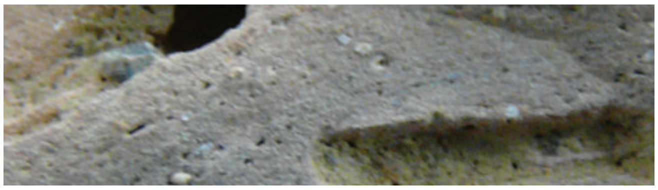

Fig. 223 No. inv. AMM1997.22: the fabric.

1983; Peacock and Williams 1986: 141; Berni Millet 1998; Carreras Monfort 2005c; Berni Millet and Moros Díaz 2012.

AMM1997.23 Handle
Thickness 1.5, width 4.4. Vertical handle, elliptical in section. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 10Y7/2; ext. surf. 10Y8/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black, dark-red and white (limestone ?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.24 Handle
Thickness 1.5, width 4.5. Elliptical handle, and attack of the rim. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys (?). Contents: fish-sauce. Fabric colour: core grey; ext. surf. dark grey Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black, dark-red and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

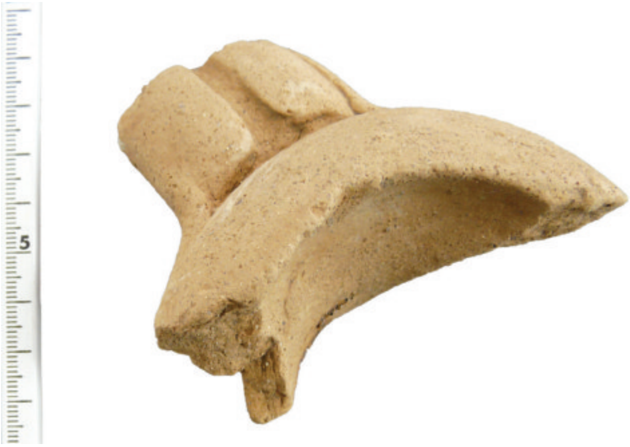

Fig. 224 Triangular rim, short neck of Lusitana 3 (no. inv. AMM1997.26).

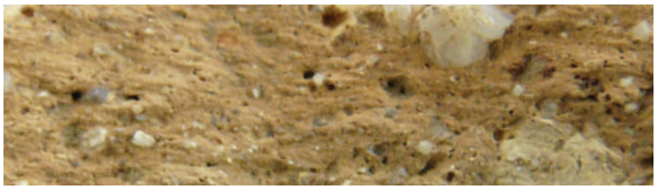

Fig. 225 No. inv. AMM1997.26: the fabric.

AMM1997.25 Rim
Wall thickness 0.6/0.7; max height 4.4. Rounded-triangular rim. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR7/10; ext. surf. 10YR8/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black, red-brown and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.26 Rim (Figs. 224, 225)
Diameter 8. Triangular rim, short neck. Classification: Lusitana 3 (?). Production: Tejo/Sado valleys. Contents: wine. Fabric colour: core grey; ext. surf. 10YR8/8. Visual characteristics: hard-fired, harsh coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black, red-brown and white (limestone?) grains; abundant grains of quartz? Date range: (mid) first - (early) second/third century AD (?). References: Diogo 1987; Diogo and Faria 1990; Mayet, Schmitt and Silva 1996; Fabião 1997, 1998, 2005a, 2008; Quaresma and Raposo 2014.

AMM1997.27 Rim and attack of the handle
Diameter 7.4; wall thickness 0.8; handle thickness 1.4-1.6, width 4. Triangular-shaped rim, attack of grooved handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR6/2; ext. surf. 7.5YR6/8. Visual characteristics: hard-fired, harsh coarse fabric. Very abundant ill-sorted variable size inclusions of grey, brown, black, and white (limestone?) grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.28 Handle (Fig. 226)
Thickness 1.8, width 4.3. Vertical handle, elliptical in section. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR4/2; ext. surf. 7.5YR5/8. Visual characteristics: hard-fired, harsh coarse fabric. Very abundant ill-sorted variable size inclusions of grey, brown, black, and white (limestone?) grains. Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.29 Rim and handle (Fig. 227)
Diameter 6.4; handle thickness 1.4 (min. 1), width 3.5. Everted rim and part of a grooved handle. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 2.5Y5/4; ext. surf. 2.5Y5/6. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, black, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.30 Rim
Max height 2.2. Thick everted triangular rim. See no. inv. AMM1997.31. Classification: Beltran IIB. Production: *Baetica* coast (Cádiz fabric). Contents: fish-based products. Fabric colour: core 7.5YR8/4; ext. surf. 10Y9/6. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, red, and white (limestone?) grains; quartz? Date range: Claudian era – (first quarter) third century AD. References: Beltrán Lloris 1977: *passim*; Peacock and Williams 1986: 124-125; Bernal Casasola 2000: *passim*, esp. 278; Lagóstena Barrios 2004, 2005b; Bernal Casasola, García Vargas and Díaz Rodríguez 2012.

AMM1997.31 Rim
Diameter 15.6; max height 3. Thick everted triangular rim. See no. inv. AMM1997.30. Classification: Beltran IIB. Production: Baetica coast (Cádiz fabric). Contents: fish-based products. Fabric colour: core 7.5YR8/4; ext. surf. 10Y9/6. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, red, and white (limestone?) grains; quartz? Date range: Claudian era – (first quarter) third century AD. References: Beltrán Lloris 1977: *passim*; Peacock and Williams 1986: 124-125; Bernal Casasola 2000: *passim*, esp. 278; Lagóstena Barrios 2004, 2005b; Bernal Casasola, García Vargas and Díaz Rodríguez 2012.

AMM1997.32 Rim and handle
Handle thickness 1.8-1.85 by 4.2. Vertical rim and part of the grooved handle. Classification: Almagro 51 c (?). Production: Tejo/Sado valleys (?). Contents: fish-sauce. Fabric colour: core 10Y7/2; ext. surf. 10Y9/6. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, red, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD (?). References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.33 Rim and handle (Fig. 228)
Max height 8.6; rim thickness 2.25; wall thickness 1.8 to 1. Simple rounded lip, attack of the handle. Classification: Dressel 14. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 7.5YR6/10; ext. surf. 10Y8/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, red, and white (limestone?) grains; quartz? Date range: Claudian period - early third century AD. References: Peacock and Williams 1986: 126-127; Diogo 1987; Alarcão and Mayet 1990: *passim*; Fabião and Carvalho 1990: *passim*; Mayet 1990: 29-31; Fabião 1997: *passim*; Bernal Casasola 2000: 278-279; Fabião 2004: *passim*, 2008: *passim*; Raposo and Viegas 2013.

AMM1997.34 Handle
Thickness 1.6/1.5; width 3.8. Elliptical handle. Production: local production. Fabric colour: core 7.5YR4/2; ext. surf. 7.5YR4/6. Visual characteristics: hard-fired, harsh coarse fabric. Abundant well assorted variable size inclusions of grey, brown, and white (limestone?) grains; quartz?

AMM1997.36 Handle
Thickness 1.7, width 4.1. Grooved handle (and attack). Production: Tejo/Sado valleys (?). Fabric colour: core 7.5YR6/10; ext. surf. 7.5YR6/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, and white (limestone?) grains; quartz?

AMM1997.38 Handle
Thickness 1.3, width 4.6. Vertical elliptical handle with one groove and attack. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 2.5YR5/12; ext. surf. 2.5Y7/10. Visual characteristics: hard-fired, smooth coarse fabric. Abundant ill-sorted variable size inclusions of grey, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.39 Handle
Wall thickness 0.8 to 1.2; handle thickness 1.3, width 4.6. Shoulder and attack of the handle. Production: Tejo/Sado valleys. Fabric colour: core 10YR6/4, 10YR5/6; ext. surf. 10YR6/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, and white (limestone?) grains; quartz?

AMM1997.40 Base (Fig. 229)
Base diameter 5.2; wall thickness *c.* 1; max height *c.* 6.8. Short hollow base. Classification: Almagro 51 c (earlier variant). Production: Algarve (?). Contents: fish-sauce. Fabric colour: core 10YR6/8; ext. surf. 10YR7/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas 2014; Viegas, Raposo and Pinto 2014.

AMM1997.42 Handle
Thickness 1.4, width 3.6. Vertical handle with three grooves. Production: Tejo/Sado valleys. Fabric colour: core 10R6/16; ext. surf. 10YR7/10. Visual characteristics: hard-fired, smooth coarse fabric. Abundant ill-sorted variable size inclusions of grey, orange, red-brown and white (limestone?) grains; quartz?

AMM1997.43 Rim and handle
Diameter 13.8; handle thickness 1.8, width 3.5. Vertical thickened rim, and handle with two grooves. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core 10YR7/8; ext. surf. 10YR6/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, red-brown and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

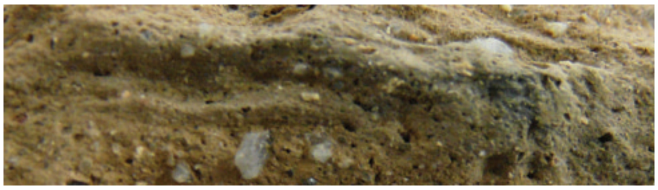
Fig. 226 No. inv. AMM1997.28: the fabric.

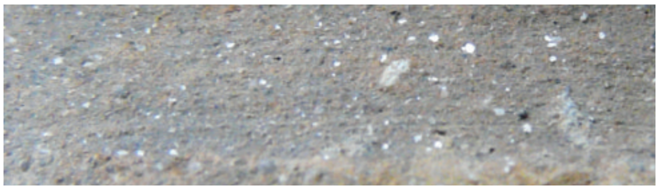
Fig. 227 No. inv. AMM1997.29: the fabric.

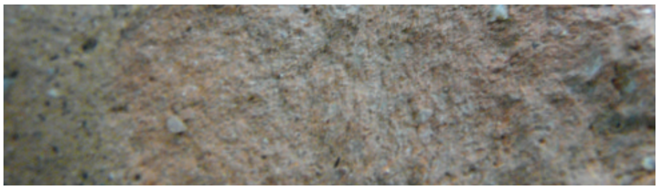
Fig. 228 No. inv. AMM1997.33: the fabric.

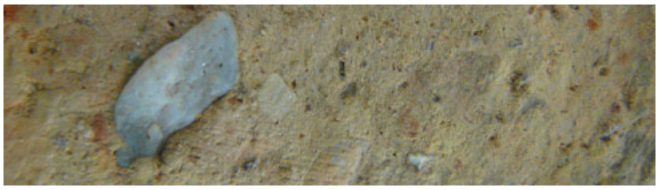
Fig. 229 No. inv. AMM1997.40: the fabric.

AMM1997.44 Rim and handle (Fig. 230)
Diameter 10.6; handle thickness 1.5, width 5.1.Rim noticeably thickened in the form of a collar, curved handle with groove. Classification: Almagro 51 A & B. Production: Sado valleys (?). Contents: fish products. Fabric colour: core 10YR7/8; ext. surf. 10YR6/8. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, red-brown and white (limestone?) grains; quartz? Date range: (late) fourth - (mid) sixth century AD. References: Almagro Basch 1955; Beltrán Lloris 1970; Parker 1977: 35-40; Keay 1984: 156-168; Alarcão and

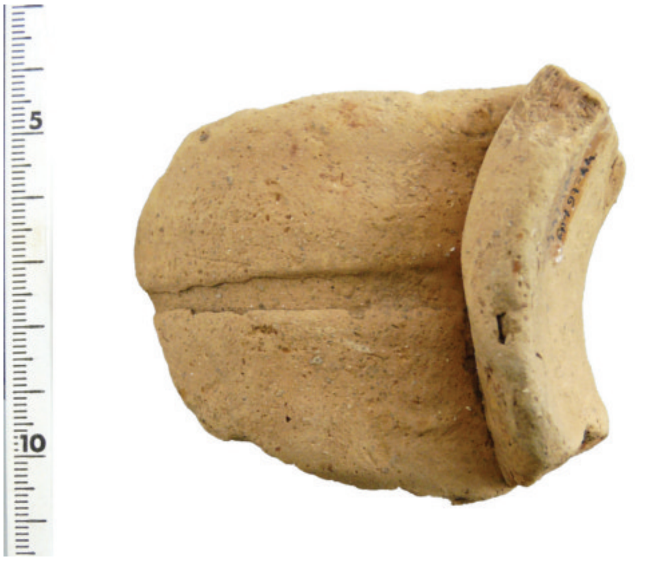

Fig. 230 Thickened rim in the form of a collar and curved, grooved handle of Almagro 51 A&B (no. inv. AMM1997.44).

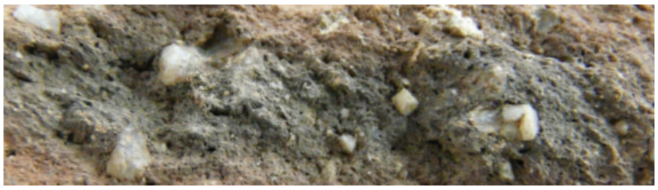

Fig. 231 No. inv. AMM1997.46: the fabric.

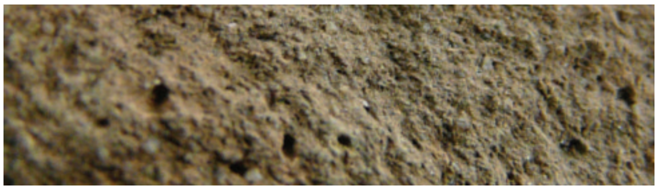

Fig. 232 No. inv. AMM1997.52: the fabric.

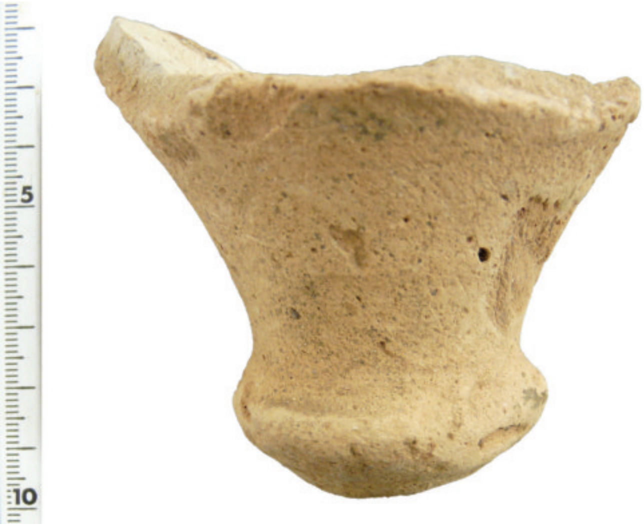

Fig. 233 Button-type base of Almagro 51 c (no. inv. AMM1997.62).

Mayet 1990; Étienne 1990; Fabião 2004, 2005c; Pinto and Magalhães da Silva 2014.

AMM1997.45 Handle
Thickness 2.4, width 4. Handle (semi)elliptical in section. Production: local production ? Fabric colour: core grey; ext. surf. dark grey. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, red-brown, red-orange and white (limestone?) grains; quartz?

AMM1997.46 Rim and handle (Fig. 231)
Thickness lip 0.9; wall thickness 0.7; handle thickness 1.5, width 4. Rim thickened and part of the handle with a groove. See no. inv. AMM2003B1010.1. Classification: Almagro 51 A & B. Production: local production (?). Contents: fish products. Fabric colour: core dark grey; ext. surf. dark orange/brown. Visual characteristics: hard-fired, rough coarse fabric. Very abundant ill-sorted variable size inclusions of grey, red-brown, red-orange and white (limestone?) grains; quartz? Date range: (late) fourth - (mid) sixth century AD. References: Almagro Basch 1955; Beltrán Lloris 1970; Parker 1977: 35-40; Keay 1984: 156-168; Alarcão and Mayet 1990; Étienne 1990; Fabião 2004, 2005c; Pinto and Magalhães da Silva 2014.

AMM1997.47 Handle
Handle thickness 4.3, width 1.7; wall thickness 0.8. Vertical handle, elliptical in section, with three grooves and attack of handle. Two fragments reassembled. Production: Tejo/Sado valleys. Fabric colour: core grey, between lighter zones pink/orange; ext. surf. pink/orange/yellow. Visual characteristics: hard-fired, rough coarse fabric. Very abundant ill-sorted variable size inclusions of grey, red-brown, red-orange and white (limestone?) grains; quartz?

AMM1997.48 Handle
Thickness 1.8, width 4.3. Semi-elliptical handle, with three grooves on the top and attack of handle. See no. inv. AMM1997.46. Production: local production (?). Fabric colour: core dark grey; ext. surf. dark orange/brown. Visual characteristics: hard-fired, rough coarse fabric. Very abundant ill-sorted variable size inclusions of grey, red-brown, red-orange and white (limestone?) grains; quartz?

AMM1997.49 Handle
Thickness 2.1, width 4.2. Elliptical handle, central groove. Classification: Almagro 51 c. Production: Tejo/Sado valleys (?). Contents: fish-sauce. Fabric colour: core pink/beige; ext. surf. pink/orange. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted small-size inclusions of grey, red-brown, red-orange and white (limestone?) grains;

mica? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.50 Handle
Thickness 1.5, width 4.3. Vertical handle, irregular section, with two grooves. Production: local production (?). Fabric colour: core yellow/brown; ext. surf. yellow/brown. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted small-size inclusions of grey, red-brown, red-orange and white (limestone?) grains; quartz?

AMM1997.52 Rim and handle (Fig. 232)
Diameter 12; max height 3; wall thickness 0.7; handle thickness 2.3,width 4.4. Thickish jutting rim with rounded triangular section and part of the handle. Classification: Almagro 50. Production: Tejo or Sado valleys. Contents: fish products. Fabric colour: core grey/brown; ext. surf. pale red/brown. Visual characteristics: hard-fired, rough coarse fabric. Moderate frequency of ill-sorted small-size inclusions of grey, and white (limestone?) grains; quartz? Date range: third - fifth century AD. References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1997.53 Base
Solid spike. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core red/brown; ext. surf. pale beige/brown. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.54 Rim and handle
Diameter 12.8; max height 2.6; handle thickness 1.4, width 4. Thickish jutting rim with subtriangular section and part of elliptical handle. See no. inv. AMM1997.49. Classification: Almagro 50 (?). Production: Tejo/Sado valleys (?). Contents: fish products (?). Fabric colour: core grey/orange; ext. surf. pale yellow/cream. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium-large size inclusions of grey, brown, red-orange and white (limestone?) grains. Date range: third - fifth century AD (?). References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1997.57 Rim and handle
Diameter 11.6; max height 4.8; handle thickness 2.7, width 3.5. Thickish rounded rim, and ovoid handle. Classification: Almagro 50. Production: Tejo/Sado valleys. Contents: fish products (?). Fabric colour: core grey/orange; ext. surf. pale brown/yellow. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium-large size inclusions of grey, brown, red-orange and white (limestone?) grains; quartz? On the external surface yellowish engobe. Date range: third - fifth century AD. References: Almagro Basch 1955: 295, 302, fig. 297; Beltrán Lloris 1970: 541, fig. 220; Parker 1977: 39-40; Keay 1984: 169-172; Peacock and Williams 1986: 130-131; Alarcão and Mayet 1990; Étienne 1990; Fabião and Carvalho 1990; Fabião 2008; Almeida and Raposo 2014a.

AMM1997.58 Rim and attack of the handle
Max height 3.7; handle thickness 1.6, width 3.7. Thickish rounded rim and attack of elliptical handle. Classification: Lusitana 9. Production: Tejo/Sado valleys. Contents: wine (or fish-based products). Fabric colour: core pale grey/dark orange; ext. surf. pale orange. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium-large size inclusions of grey, brown, red-orange and white (limestone?) grains; quartz? Date range: third - fifth century AD. References: Diogo 1987; Fabião 1998: *passim*; Mayet and Silva 1998; Fabião 2004, 2005b, 2008; Raposo and Quaresma 2014.

AMM1997.59 Neck and attack of the handle
Diameter 4.4 e 5.6; thickness 0.8 to 1. Neck or shoulder with attach of the handle. Production: Tejo/Sado valleys (?). Fabric colour: core pale pink/orange; ext. surf. pale orange/yellow. Visual characteristics: hard-fired, rough coarse fabric. Abundant well assorted medium and small-size inclusions of grey, brown, and white (limestone?) grains; quartz? mica?

AMM1997.60 Rim and attack of the handle
Diameter 15.2; height 2.7; handle thickness 1.3, width 3.6. Thickish rounded rim and attack of elliptical handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core grey/brown; ext. surf. brown/orange. Visual characteristics: hard-fired, smooth coarse fabric. Moderate frequency of ill-sorted medium and small-size inclusions of grey, brown, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Car-

valho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.61 Handle
Thickness 1.4, width 4.3. Vertical handle, elliptical in section, with one groove in the centre. Production: Tejo/Sado valleys. Fabric colour: core grey between orange zones; ext. surf. pale orange/yellow. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted medium and small-size inclusions of grey, brown, dark-red, orange and white (limestone?) grains; quartz? mica?

AMM1997.62 Base (Fig. 233)
Height max 7.1; thickness wall 0.8 (min). Base, type button. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core pale brown; ext. surf. light orange/pink. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, brown, dark-red, orange and white (limestone?) grains; quartz? mica? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.63 Handle
Thickness 2.5. Curved handle, nearly circular. Classification: Dressel 23. Production: Guadalquivir valley (?). Contents: olive based products. Fabric colour: core pale pink/cream; ext. surf. pale pink. Visual characteristics: hard-fired, smooth coarse fabric. Moderate frequency of well assorted variable size inclusions of grey, dark-brown, and white (limestone?) grains; quartz? Date range: (late) third - (mid) sixth century AD. References: Remesal Rodríguez 1983; Peacock and Williams 1986: 141; Berni Millet 1998; Carreras Monfort 2005c; Berni Millet and Moros Díaz 2012.

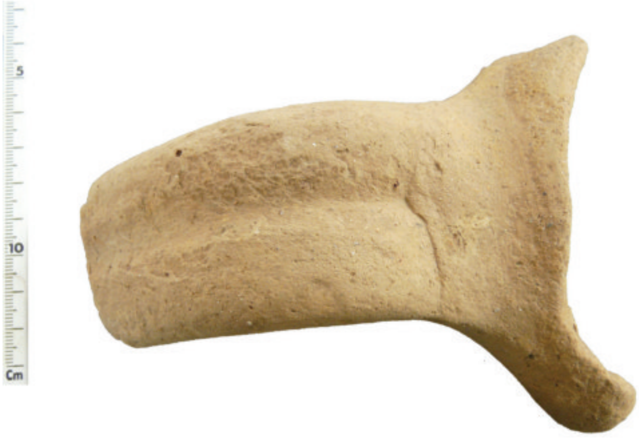
Fig. 234 Rim and part of the handle of Almagro 51 c (no. inv. AMM1997.65).

AMM1997.64 Rim and attack of the handle
Diameter 9; max height 5.3. Triangular rim and attack of the handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core pale pink/brown; ext. surf. cream. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, dark-brown, and white (limestone?) grains; quartz? mica? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.65 Rim and handle (Figs. 234, 235)
Diameter 10; handle thickness *c.* 1.7, width 4.5. Rim and part of the handle. Classification: Almagro 51 c. Production: Tejo/Sado valleys. Contents: fish-sauce. Fabric colour: core pale grey, between orange zones; ext. surf. pale orange/brown. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, dark-brown, and white (limestone?) grains; quartz? Date range: third – (mid) fifth century AD. References: Keay 1984: 172-178; Peacock and Williams 1986: 132-133; Diogo 1987; Étienne 1990; Fabião and Carvalho 1990; Silva, Coelho-Soares and Correia 1990; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Viegas, Raposo and Pinto 2014.

AMM1997.66 Handle
Thickness 4. Curved handle, nearly circular in section. Classification: Dressel 20. Production: Guadalquivir valley. Contents: olive-oil. Fabric colour: core pale grey, between orange zones; ext. surf. pale orange/brown. Visual characteristics: hard-fired, rough coarse fabric. Abundant ill-sorted variable size inclusions of grey, dark-brown, and white (limestone?) grains; quartz? Date range: first - (third quarter) third century AD. References: Beltrán Lloris 1970; Guénoche and Tchernia 1977; Peacock and Williams 1986: 136-140; Martin-Kilcher 1987; Berni Millet 1998: *passim*; Carreras Monfort 2005b; Berni Millet 2008; Berni Millet and García Vargas 2012.

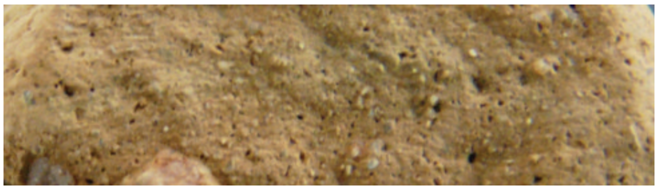
Fig. 235 No. inv. AMM1997.65: the fabric.

PART V

CONCLUSIONS

V.1 STRUCTURAL ANALYSIS OF SAMPLE MASONRY

Elisabetta De Minicis, Emilia Gallo

a Introduction

In July 2011 we started a study about masonry with a specific attention on all buildings that were excavated in *Ammaia* over the years[1]. A series of structures in good state of conservation were analyzed according to the specific methods of "Archeology of Architecture"[2]. In this way, it was possible to technically examine the main elements of these buildings so as to broaden our knowledge about the building techniques in this town.

In Italy the Archaeology of Architecture[3] experienced an intense and long discussion about methods in the course of the 1980s and 1990s, a period in which this discipline was definitely established, heading toward an interdisciplinary qualification, where different methods and approaches allow the analysis of different elements[4].

Together with Italy, Spain has to be mentioned among the European countries in which buildings are studied with a stratigraphic perspective and the Archaeology of Architecture is considered as a specific and independent branch of research. The journal "Arqueologia de la Arquitectura"[5] has been for ten years an important point of reference for the Mediterranean area specifically for Portugal[6], especially for applied technologies and data restitution.

As this kind of study was completely lacking for *Ammaia*, we started our research with a sampling in the four excavated areas (Forum, Baths, Southern Gate and the so-called Peristyle), hoping that it could have been possible to integrate the results of excavations for dating. The first step was therefore to perform the direct observation of artifacts, that are documented with photos and orthophotos. A form was filled for each identified stratigraphic unit (SU), where all observation about the masonry were also integrated[7]. In a study about masonry like these of *Ammaia*, we need to consider two important elements that define a masonry type: material (dimensions and manufacturing) and installation (technique, use and quality of binder and mortar). It is essential to assess the quality of used material (if primary use or reuse) and, when the building material is stone, the geological type, and then the origins of this type. This step in the analysis procedure is very important because it sheds light on the financial commitment size of a construction and also suggests some elements about its organization, providing important information and data about manpower. We have to think that a local stone is cheaper than imported material, but in particular cases (e.g. religious buildings or other high quality buildings), some contractors can adopt solutions about materials supply that contrast with the financial commitment on behalf of other benefits or customer needs.

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[1] I take this opportunity to thank Cristina Corsi that involved the University of Tuscia (Viterbo, Italy) and, in particular, me and two students, Emilia Gallo and Vincenzo Macchione, both graduates in Medieval Archaeology and currently working to complete their training, in the framework of the international project *Ammaia*.

[2] With this term we intend what is usually addressed in English as "Buildings Archaeology". The definition of "Archaeology of Architecture" has been chosen on the basis of the assonance with the neo-Latin languages in which the discipline has been first defined (*infra*), but of course what we intend here is the technical analysis of structural elements of buildings and of building techniques, and not the study of their formal, aesthetic and decorative features.

[3] This branch of archaeology concerns the study of still preserved structures with non-destructive approaches, whether in urban or countryside environment, according to a "stratigraphic approach" that allows us to identify "the individual actions of construction and demolition, to recognize the mutual relations of anteriority, simultaneity and afterwardness and to reconstruct the sequence" (Brogiolo and Cagnana 2012: 7).

[4] We refer here to the two manuals published in the last years (Boato 2008, Brogiolo and Cagnana 2012), dedicated primarily to architects and archaeologists interested in addressing this area of study, where the methodological aspects and perspectives of application provided by the discipline are illustrated. For the state of the art at the regional level see D'Ulizia 2005. Updates on research and methodologies can be found in the annual journal "Archeologia dell'Architettura" (appendix of "Archeologia Medievale").

[5] The journal includes a section about the application of new technologies or scientific analysis of archaeological structures. For a summary of the first testing in Spain about methodological aspects see Quiros Castillo 2002: *passim*.

[6] For case-studies in Portugal see Magalhaes Ramalho 1996 and some interesting articles in the above mentioned journal. In particular, see: Magalhaes Ramalho 2004; Oliveira Fontes, Paes Machado and Barroso Catalão 2004: *passim*. For urban areas, see the recent contributions by Basílio and Almeida 2010, and Fontes, Catalão and Alves 2010, focused on the aspects of protection and restoration.

[7] It was adopted a reference system already in use on the site, using the SU forms, to facilitate the cross-reference among data derived from the analysis of masonry and excavation data. See chapters I.5, II.5 and III.4.

Another element to consider is how materials are worked and installed. For example the use of stone squared blocks involves the use of specific instrument for cutting stone and tool for finishing, and also involves the presence for a long time of a stone cutter for the architectural elements. Time and complexity of work depends upon the stone hardness and plastic features, factors that also impact the financial commitment. Obviously, it is faster and cheaper to use naturally fractured or rough-hew stones.

In order to understand the modalities of installation it is essential to draw attention to the building technique, examining both the "weaving" and the wall section. About "waving", that is the exterior appearance of the masonry, what we need to notice first of all is the presence or not of rows[8] that are directly connected with material and its processing techniques. Obviously in the implementation of well-worked material is easy to be confronted with a regular type of weaving and rows (although with many variants), while in the case of heterogeneous materials techniques require specific rules to ensure the structural soundness.

Solutions are many and follow local knowledge handed down for centuries. The only recurrent factor is the abundant use of mortar, usually very durable, with the use of "wedges" or elements of small size compared to a homogeneous medium size, to fill in the gaps, which are formed between one stone and another, or to create real "oriented rows". The use of heterogeneous materials in masonry does not necessarily indicate a "weakness" of the construction that indeed requires, among other things, a particular attention in the use of binders, which must be of good quality to ensure the solidity. It is instead the way to build a wall, that we can observe especially considering its section, which ensures its stability. In case of brick faced wall, for example, is the inclusion of passing elements which determines the cohesion between the inner core and the external facing. In walls that use heterogeneous mixed material and or that present less consistent brick faced wall, then a greater number of elements of large size is present, almost forming an "interlocking" section, as it is very frequent in medieval walls that use not worked stones[9].

We have already mentioned the importance of the binder, and among the different types, it is the analysis of the mortar (a mixture of lime and aggregates) which can give us more information: it can be seen formally how the mortar is applied (in joints, in specific connection with the other materials, with presence or absence of finishes, and so on), but mostly you can analyze its composition, conducting sophisticated investigations, using C14 calibration among others[10]. Data that are obtained can be very interesting mostly when they can highlight the differences in the use of aggregates. These anomalies, together with other construction technique features, can lead to not only identify the places of origin of the aggregates themselves but also to establish the period of use of a specific provision. Exemplary, in this regard, was the case of Genoa, where a deep knowledge of the area (especially of local sands) associated with a significant number of samples from historical buildings has allowed us to identify the succession over time of different provisioning areas exploited in the construction industry until the seventeenth century, when it was introduced and preferred pozzolanic tufa. An important contribution to the dating of mortars, developed in recent years, is represented by the analysis with the C14 on samples of small particles of charcoal (combustion residue of lime) or on the small "lumps" of lime (which are formed when the lime is hydrated and becomes what is known as "slaked lime"), which allow to determine the time span of construction.

E. D. M.

b Analysis of sample

In the Forum area (sectors A/D) five samples belonging to the portico walls, brought to light during the excavations of 2000 and 2010, were examined.

In particular, the first three samples analysed (SUs 2016, 2015, 2015b), are located respectively in the squares D1101, D1001 and A901 (see Fig. 45).

The fourth and the fifth samples (SUs 2046, 2045), which were supported only by photographic documentation in order to use the samples as a basis for comparison, are located in the squares D1003 and D903.

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[8] In this regard, we wish to remember the remark by Tiziano Mannoni (1997) about the type of workers who worked in a construction site, with the technical distinction between "stonemason" techniques and "bricklayer" techniques.

[9] Boato 2008: 152-153.

[10] The mortars of *Ammaia* have been studied in the framework of a master paper by Ines Cardoso, in the framework of the FCT project *Ammaia* (PTDC/HIS-ARQ/103227/2008, see *supra*, Introduction: 13). Seventeen samples have been collected from the area of the Southern Gate (the West Tower and the residential area next to it), the so-called "*macellum*" and "*peristylium*", the Baths, the podium of the temple and the portico of the Forum. The methodology of chemical, mineralogical and microstructural characterization has involved several complementary techniques, including stereomicroscopy, X-ray diffraction, thermal analysis and scanning electron microscopy coupled with energy dispersive X-ray spectroscopy. The results achieved so far show that the mortars used in the earlier phases of the town's edification were mainly composed of soil (clays). Later, during the main monumentalizing period, mortars were composed using a calcitic binder and the mortar composition varied according to their use and function. The samples from a period subsequent to the Roman occupation are based on a dolomitic binder: Cardoso *et al.* 2013.

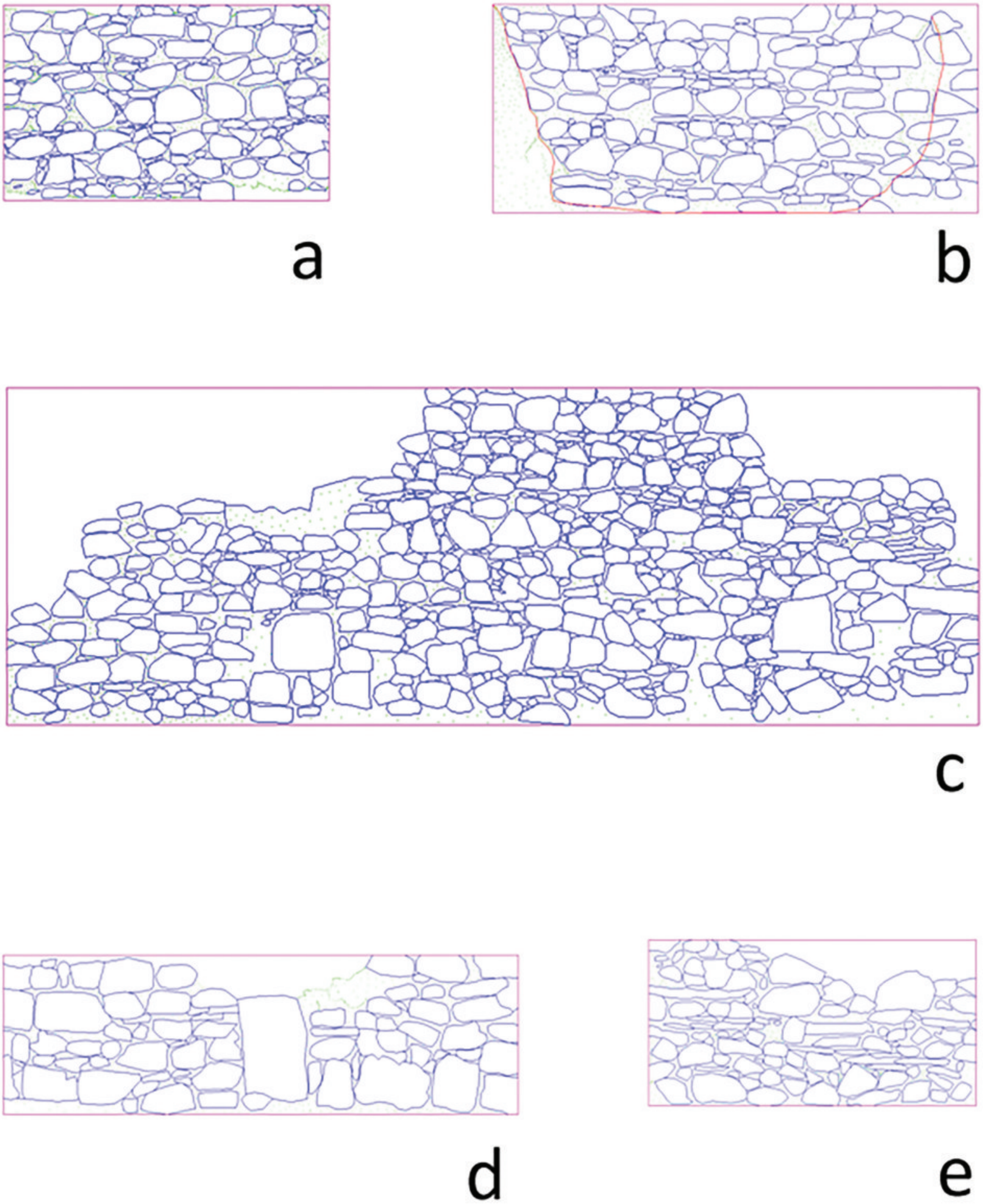

Fig. 236 a) Type I (SU 2016, 2015); b) Type Ia (SUs 2015b, 2045, 15, 44, 87), c) Type Ic (SU P4, Pr1); d) Type II (SU P7); e) Type IIa (SU P23) (elaboration E. Gallo after © *Fundação Cidade de Ammaia*).

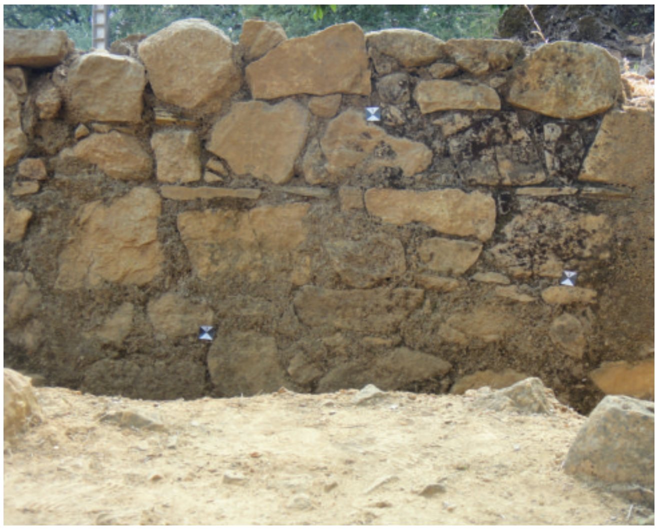

Fig. 237 *Ammaia*, Baths. Sample SU 44 (Type I).

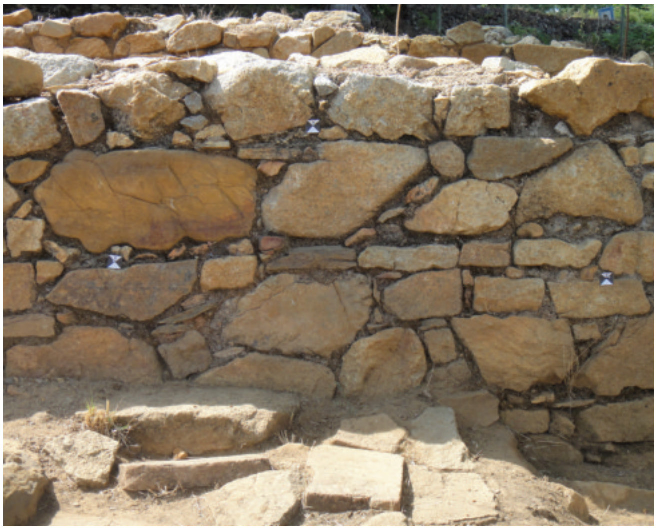

Fig. 238 *Ammaia*, Baths. Sample SU 87 (Type I).

In the Baths area (sector B) the samples chosen are four, belonging to the building structures unearthed during the excavation of 2010: SUs 8, 15, 44, 87 (see Fig. 78).

Three samples were taken in the Southern Gate area: P4, connected to East Tower, P7 and P23, related to masonry structures in the excavation area (see Fig. 130), and all the structures of the West Tower, with two perspective drawings, internal and external. Finally, in the "*Peristylium*" area (sector B) the best-preserved wall structure was analysed, the SU Pr. 1.

All samples examined were subject to a study that turned them into tools useful to understand the construction dynamics and to pinpoint a building techniques seriation. This type of analysis appears to be important not only for the chronological attribution about the various phases of construction of the structures examined in the centre of the city, but also for the study of the conveying of empirical knowledge related to "ways of building" (Brogiolo and Cagnana 2012: 163). "If, in fact, the conveying of knowledge through observation and reproduction of building is peculiar to all technical environments, however, the ways in which this occurs are very different" (Bianchi 1996: 53-64).

Skilled workers pass on a defined and elitistic knowledge, passed down to an apprentice from a master. This transmitted knowledge is primarily influenced by economic and political events that characterise any area; furthermore the geographical and geomorphological characteristics are important factors, contributing to the study of masonry[11]. For this reason, when a sample group analysis like this was taken account of a reality, such as that of *Ammaia*, an "archetype", needed to be taken, or rather an ideal model to which every ethnic group will then materialise itself through personal reprocessing, or "variants".

For the archaeological site of *Ammaia* we have a total of sixteen samples and two types of masonry, with four variants (Ia, Ib, Ic, IIa), have been identified (Type I, II).

Type I (Fig. 236, a) is characterised by a masonry technique with hanging drafts irregularly shaped and with wall fillings.

The conservation status of the samples classified as Type I is good, and for this reason a more detailed documentation is possible. The external wall texture is in fairly regular courses with wedges, used as wall fillings; the segments are not split. The inner core consists, however, of blocks of wedged in stone. The external wall texture has these size criteria: the largest element ranges between 0.29-0.30m in height and 0.47m in width, the average is between variables of 0.16 by 0.32m, 0.13m by 0.25m and 0.22m by 0.24m, the smallest measures 0.13m in height and 0.175m in width. The fillings are irregular, while for the mortars an analysis was performed, the results of which are being worked out[12].

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[11] When a type of architecture is taken into account and then this is thoroughly studied within a specific context, it is necessary to consider all of the research criteria which a complex system is based on: a) environmental factors determining a number of compulsory choices; b) a hierarchy-based social structure whose components act both at individual and group level within a broader spectrum being part of a system, and also as a unit on the basis of an identity recognising itself within a common tradition; c) a focal point, contemporarily producing and consuming its own resources and those coming from dependant territories; d) the expression of several social, political and religious networks. All crucial elements are in a continuously growing system, whose changes shall only be perceived in the long term (i.e.: economic development and its fall), or in connection with sudden and dramatic events such as an earthquake and war-related destructions. All architectures therefore stand out as parts of a heritage that can be documented in masonry and building techniques, as in the case of those social classes in urban territories and their desire to show their role and rank. (Brogiolo and Cagnana 2012: 171-172).

[12] A part of these results are published (Cardoso *et al.* 2013); another part is being worked out.

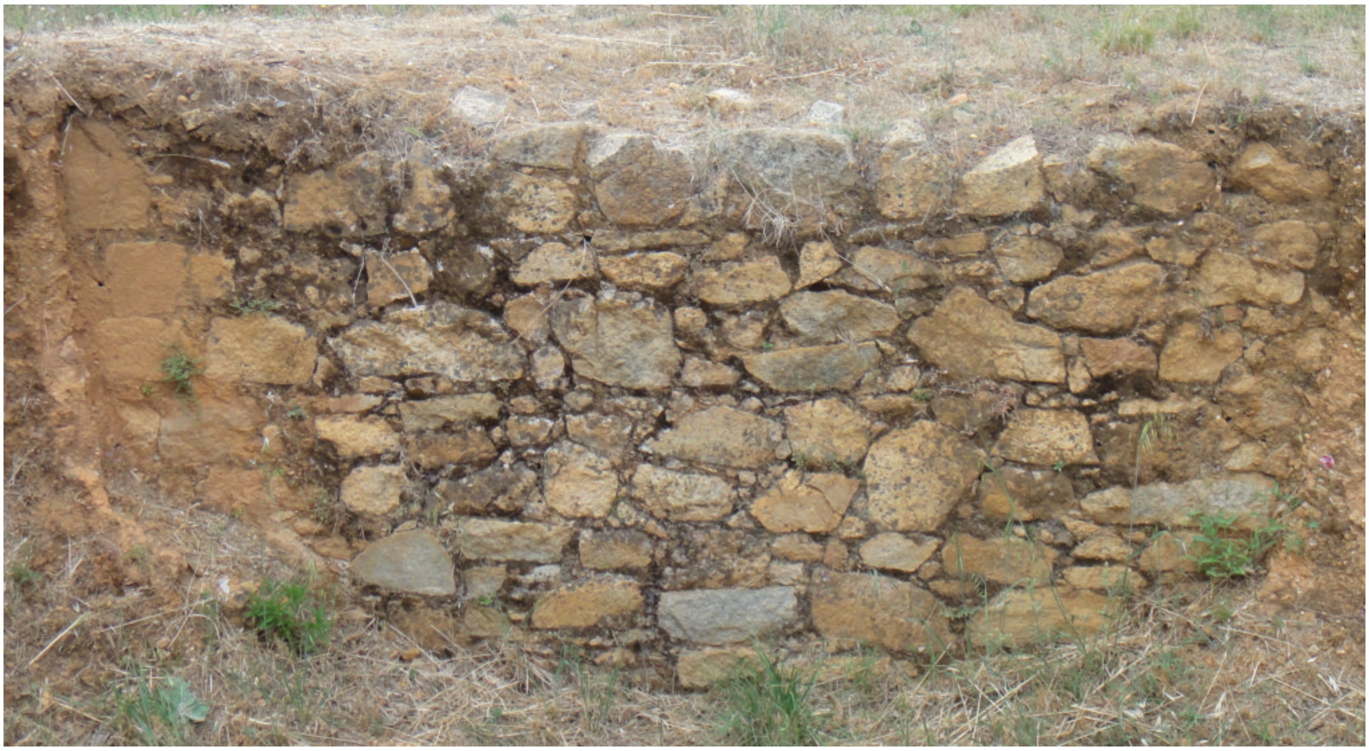

Fig. 239 *Ammaia*, Forum. Sample SU F4 (Type Ib).

A detailed study can be carried out on the obvious presence of large items inside the wall in question, to be found in almost all samples of this type, and of which there is a particular concentration in the central portion of the samples SUs 2016 and 2015; the second important element is the abundance of mortar used as a binder in some areas, also reaching 0.07m.

The samples SUs 2016 and 2015 in the Forum area and the sample SU 15 in the Baths area are categorised as Type I. However, it is necessary to make some clarifications: SU 2016 binds to SU 2015 and it is a single constructive activity; in both cases there is a certain uniformity of building stones, all in limestone and split, with no signs of finishing and with a smooth exposed face. There is an important element and that is evident in both walls: the wall filling is oblique. Probably this is a design feature used to ensure a higher degree of immobility.

Sample SU 15 in the Baths area presents the same masonry technique with only a difference: there are wall fillings, but not so evident and delineated. There were three variants of Type I (Fig. 236, b-c; see Fig. 239).

Type Ia (Fig. 236, b) is characterised by an average building technique with facing irregular outline of medium size and wall fillings. The inner core is characterised by irregular blocks. A technique, therefore, originally similar to Type I, but which presents different elements that make a complex visual effect characterised by a greater regularity. Classified as Type Ia are the samples of the Forum area SUs 2015b and 2045, the two samples of SUs 15 and 44 and SU 87 in the Baths area (Fig. 236, b).

In the two samples from the Forum SUs 2015b and 2045, there was a greater presence of elements of large size. The wall fillings seem more linear than in samples SUs 2016 and 2015 (Type I) (Fig. 236, a). Given that the fillings consist of small parts or splinters that are very regular; a course measures *c.* 0.33m. This measurement is right for both courses and coincides with a construction module consisting of two courses of stones, respected even by a scaffolding post that fits well within the module. In both cases of SUs 2015b and 2045 it is obvious that a manding of the wall is present. In fact, the masonry technique is characterised by wall fillings very different from the rest, generally of smaller size, as can be seen from the dimension of the scaffolding post insert in the courses (min. 0.025m – max. 0.05m in the presence of a ligand).

The wall texture consists of stone material of different size: the largest element measures 0.23/0.26m in height and 0.28/0.35m in width, with an average ranging between variables of 0.16m by 0.23m, 0.13m by 0.25m, the smallest measures 0.09m in height by 0.13 or 0.17m in width.

Samples of the SUs 15 and 44 and the SU 87 in the Baths area have the same masonry technique: the first sample of the SU 15 has its foundation in pebbles in sight and only a row of stone elements with wall fillings of splinters of shale was left.

The sample refers to the SU 44 (Fig. 237) has the same characteristics and the two drafts of orders are easily recognisable, corresponding to a building criterion, as previously have seen, widely attested in the Forum area. These two

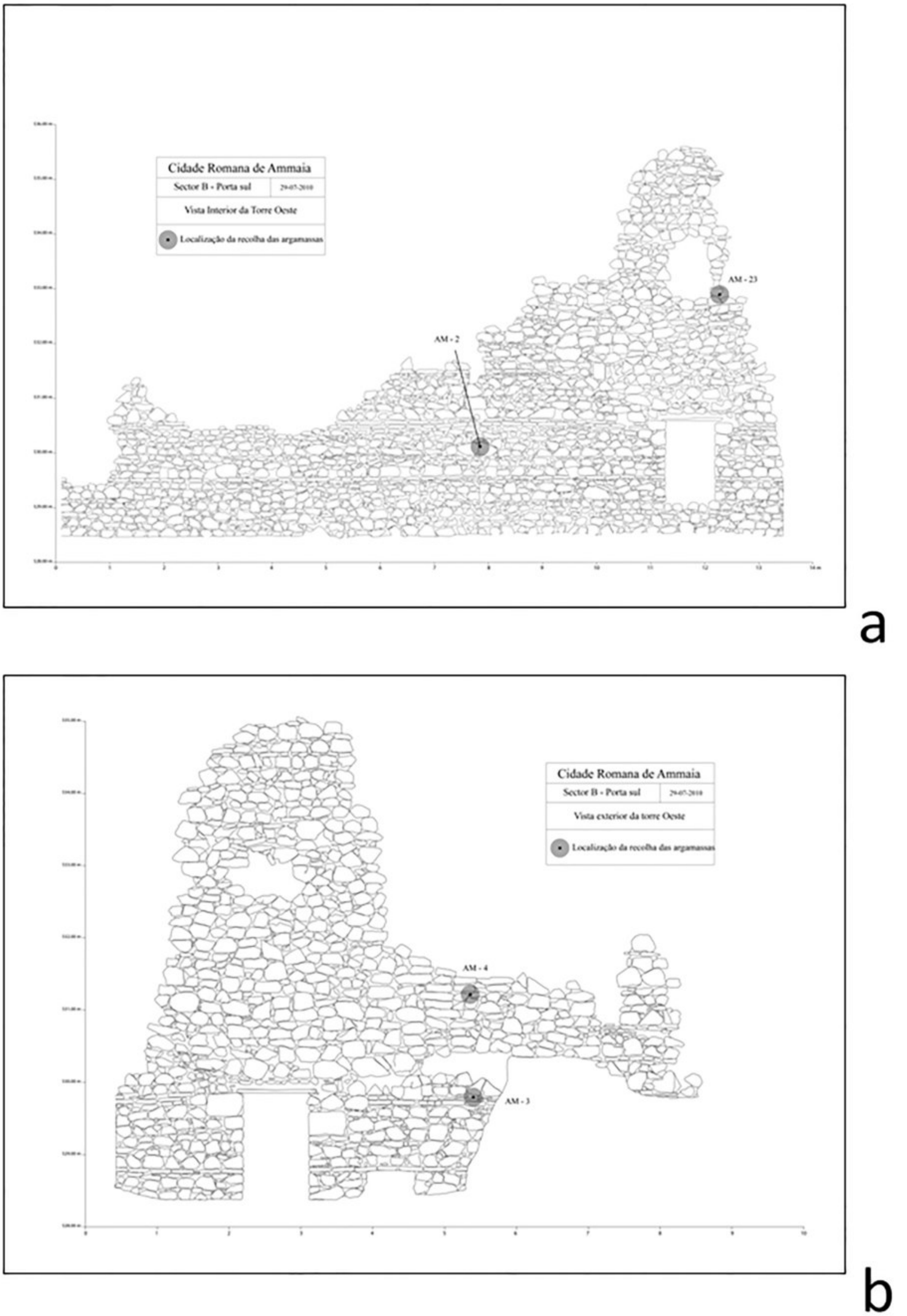

Fig. 240 *Ammaia*, Southern Gate West Tower. a) External perspective drawing, b) Internal perspective drawing (elaboration E. Gallo after © *Fundação Cidade de Ammaia*).

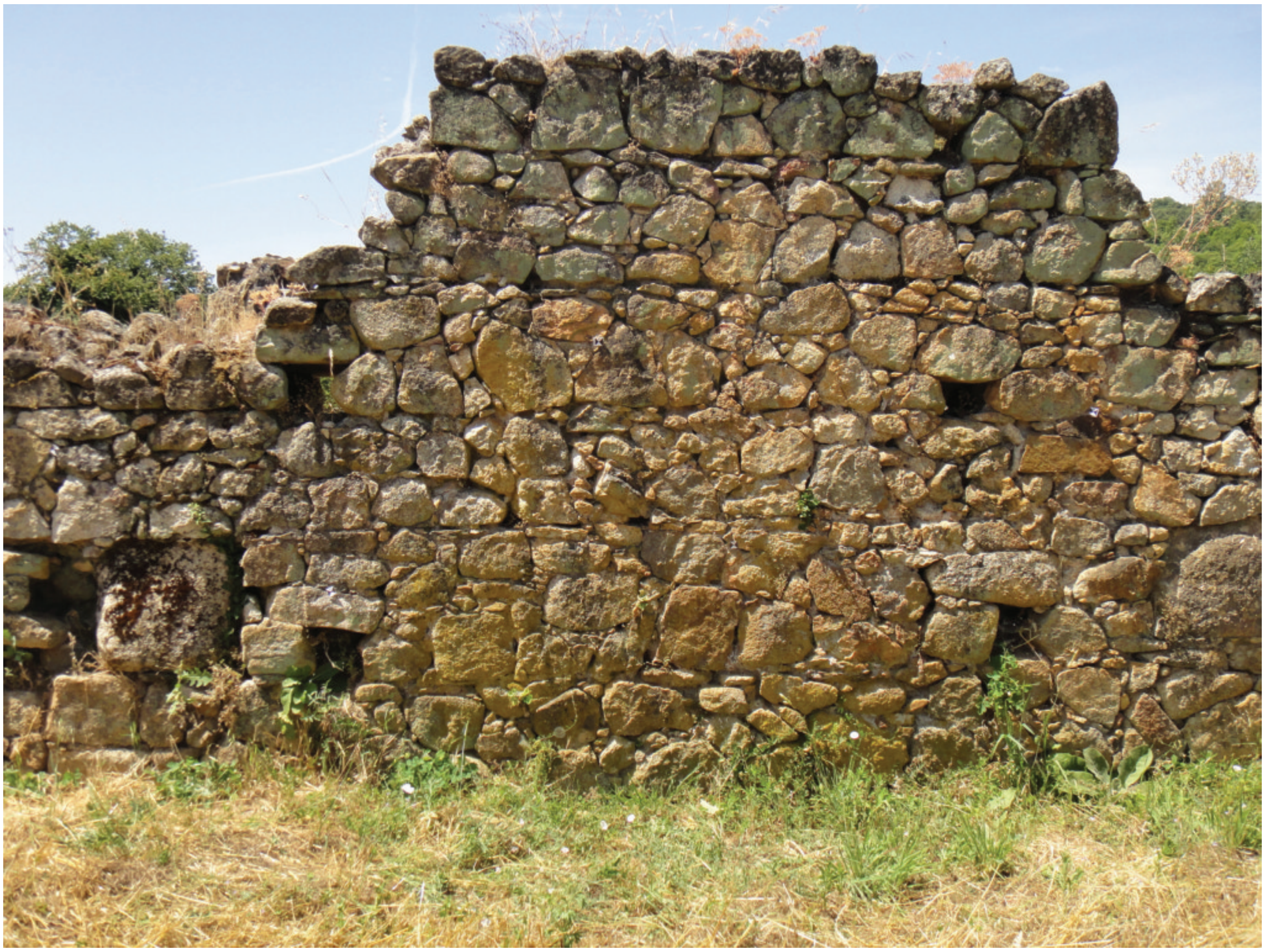

Fig. 241 *Ammaia*, Southern Gate. Sample Pr1 (Type I c).

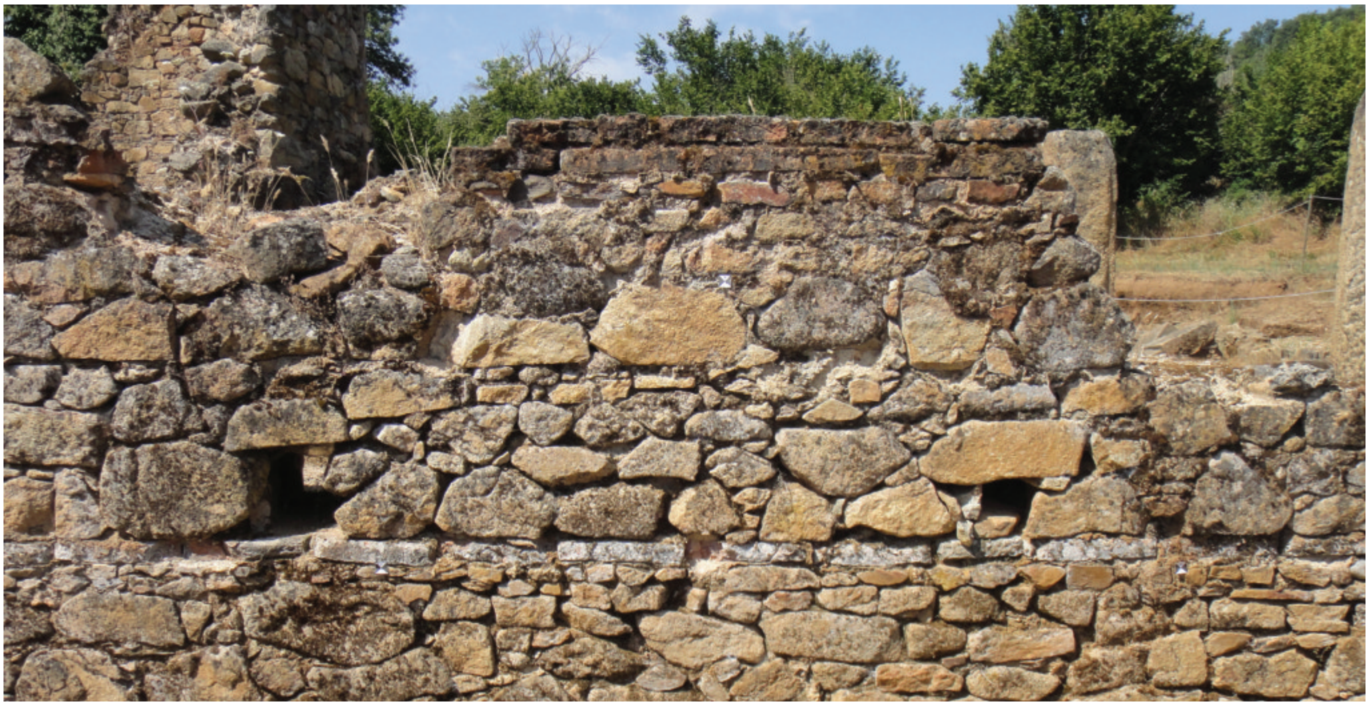

Fig. 242 *Ammaia*, Southern Gate. Sample P4 (Type Ic).

samples have wall fillings that correspond to a module of 0.445m and 0.399m.

The SU 87 (Fig. 238) has, its only difference, a lack of mortar ebbing and the wall fillings obtained from small elements to replace the real wedges, usually made of shale. A small difference is found in the measurements of the stone material of which the inner core is composed: the largest has a constant ranging between 0.214m by 0.491m, 0.182m by 0.295m and 0.121m by 0.343m, the average is between variables of 0.124m by 0.24m, 0.135m by 0.223m and 0.234m by 0.24m; the smallest measure has a constant height of 0.13m to 0.175m in width, 0.68m, 0.117 and 0.775m by 0.113m.

Type Ib (Fig. 239) is characterized by a masonry technique with a hanging drafts and irregular wall fillings. The inner core is composed by irregular blocks stuck. The result is a variant of Type I, because as it can be seen in the sample SU 2046, only example of this type, the courses have a greater regularity, as in variant Ia (Fig. 236, b), but unlike the latter it does not have a construction module consisting of two courses of stones, but from one stone to higher dimensions and short sections in which stones of medium and small sized are wedged in with scales. The dimensions of the stone material that forms the wall texture are kept similar to those of Type I.

Type Ic (Fig. 236, c) is characterised by a masonry drafts of irregular stones, wall fillings and rows of brick and shale. The feature that identifies this wall is a regularity always clearer than in Type I and in the other variants previously considered.

The samples recognised as variant Ic are the interior and outer elevation (at the bottom of the preserved wall) of the West Tower (Fig. 240, a-b); the wall Pr. 1 in the Peristyle area (Fig. 241); the wall P4 (Fig. 242), belonging to the wall which binds with the East Tower of the Southern Gate.

An analysis should be made on the basis of the observation of size criteria. In all four cases, it is an obvious division into module, thanks to the regularity, made by rows of shale and clay. The module, in the first three samples, ranges by a measure which remains constant between 0.40m and 0.45m and between 0.35m and 0.50m: what remains constant (therefore balanced in the sum of two modules) is the total size of two modules, which is always 0.85/0.90m. In the fourth case, the wall P4 of the Southern Gate, the masonry is mostly conserved in height, and clearly shows the sequence of the two modules, for a total of four modules: a first module that goes from 0.40 to 0.45m, a second module of 0.50m, a new module between 0.40 and 0.45 and, finally, a module of 0.50m.

In all four cases identified as Type Ic it is possible to see the absence of mortar ebbing, while the measures of the stone material of the inner core do not vary much from those of Type Ia and Ib.

Type II, identified in the sample P7 (Figs. 236, d; 243), relating to one of the walls of the spaces that place against the West Tower, is characterised by a technique with a predominantly reused material (limestone, granite, shale) without wall fillings ("*opera pseudo telaio*"). The external features present irregular courses and split segments. The inner core, however, is composed of segments wedged in with strong presence of quoins. The use of large items such as square blocks should be emphasized, and worked on the visible side, inserted inside the masonry with a static function: angles and breaks it in the middle of the wall can be seen probably recovered from the first phase of the Southern Gate[13].

Type II has a variant: Type IIa (Fig. 236, e; 9). This variant is recognisable in the sample P23 of one of the wall structures relevant to a building that is located N of the East Tower and it is characterised by a masonry technique with hanging mixed material: granite, shale and pebbles with wavy and abundant presence of mortar. The state of preservation of the sample is good. The external wall texture is characterised by irregular courses with ashlar split. A prevalent use of shale can be noted and this material is very often used in the inner cores of the walls, but in the form of splinters or wedges. The shale, naturally regular, is used with pebbles, to give horizontality to the texture.

It is possible to advance some considerations about the evolution of wall types, based on the performed analysis, comparing the data with other masonry structures already dated of the site of *Ammaia* and of other Portuguese realities.

A section of the city walls of *Ammaia* is still preserved and, for this reason, it can be analyzed as comparison[14]. The size criteria of the materials are slightly different from those of the examined samples: the largest has a constant ranging between 0.31m by 0.48m, 0.25m by 0.45m and 0.54m by 0.55m, the average is between variables of 0.23m by 0.24m, 0.12m by 0.22m and 0.14 by 19m; the smallest measure has a constant height of 0.085m to 0.087m in width, 0.13 by 0.08m. The dimensions of the module are not so different: the first module measures 0.50m from the top, the second between 0.50 and 0.62m. This section of wall is placed chronologically during the Early Imperial age (Corsi 2012b: 41-45). The technical analysis of the analyzed samples with dating elements emerged from the excavation data allow to formulate a hypothesis of dating: Type I, particularly present in the Forum area, seems due to the Julio-Claudian period (see chapter I.2), followed by Types Ia,

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[13] It refers to the residue of the square tower below the East Tower (Pereira 2009).

[14] It is the segment of city walls preserved under the delimiting wall of a modern property in the excavation sector named Parking lot 1 (Corsi 2012b: 41-45).

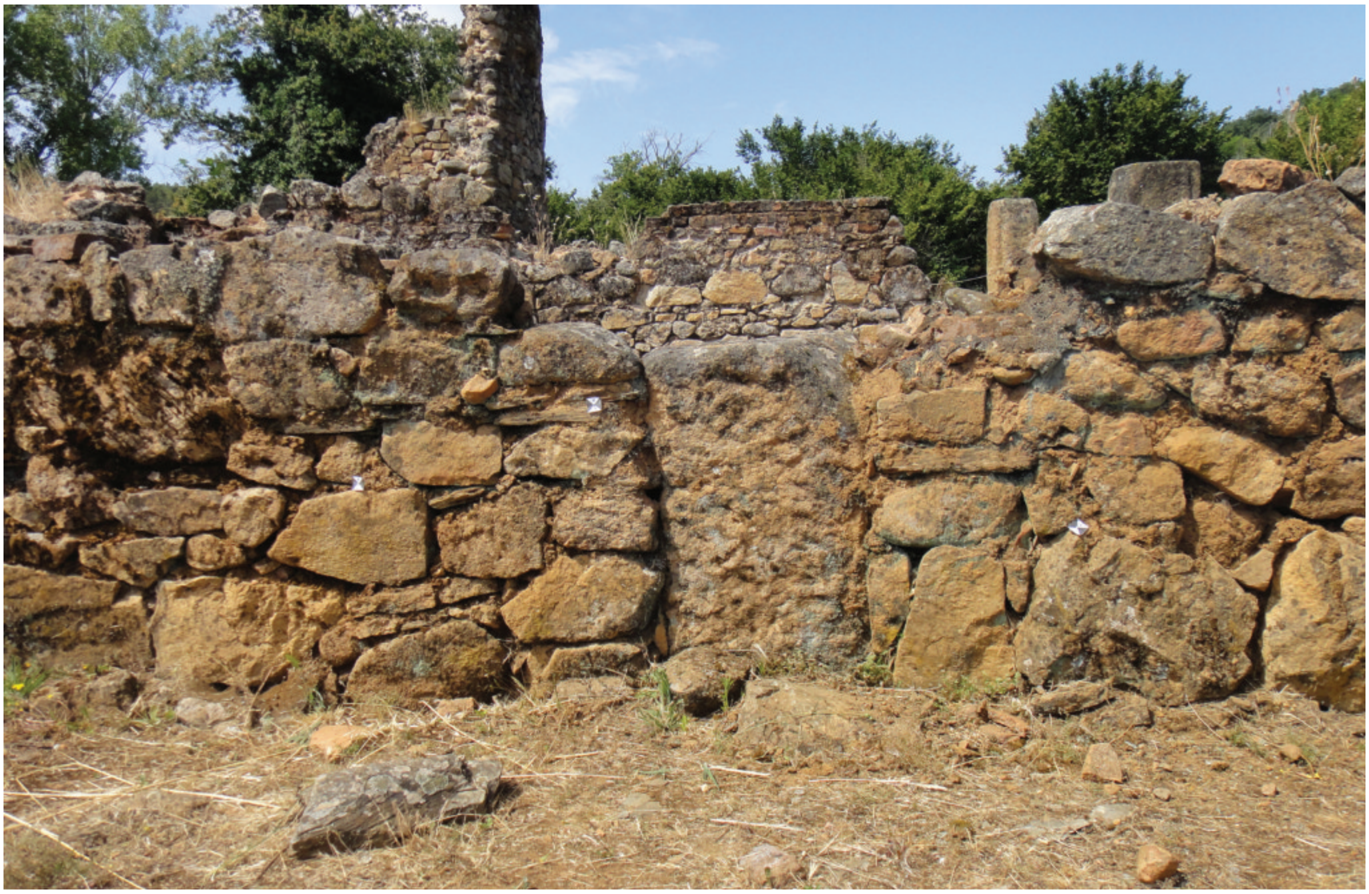

Fig. 243 *Ammaia*, Southern Gate. Sample P7 (Type II).

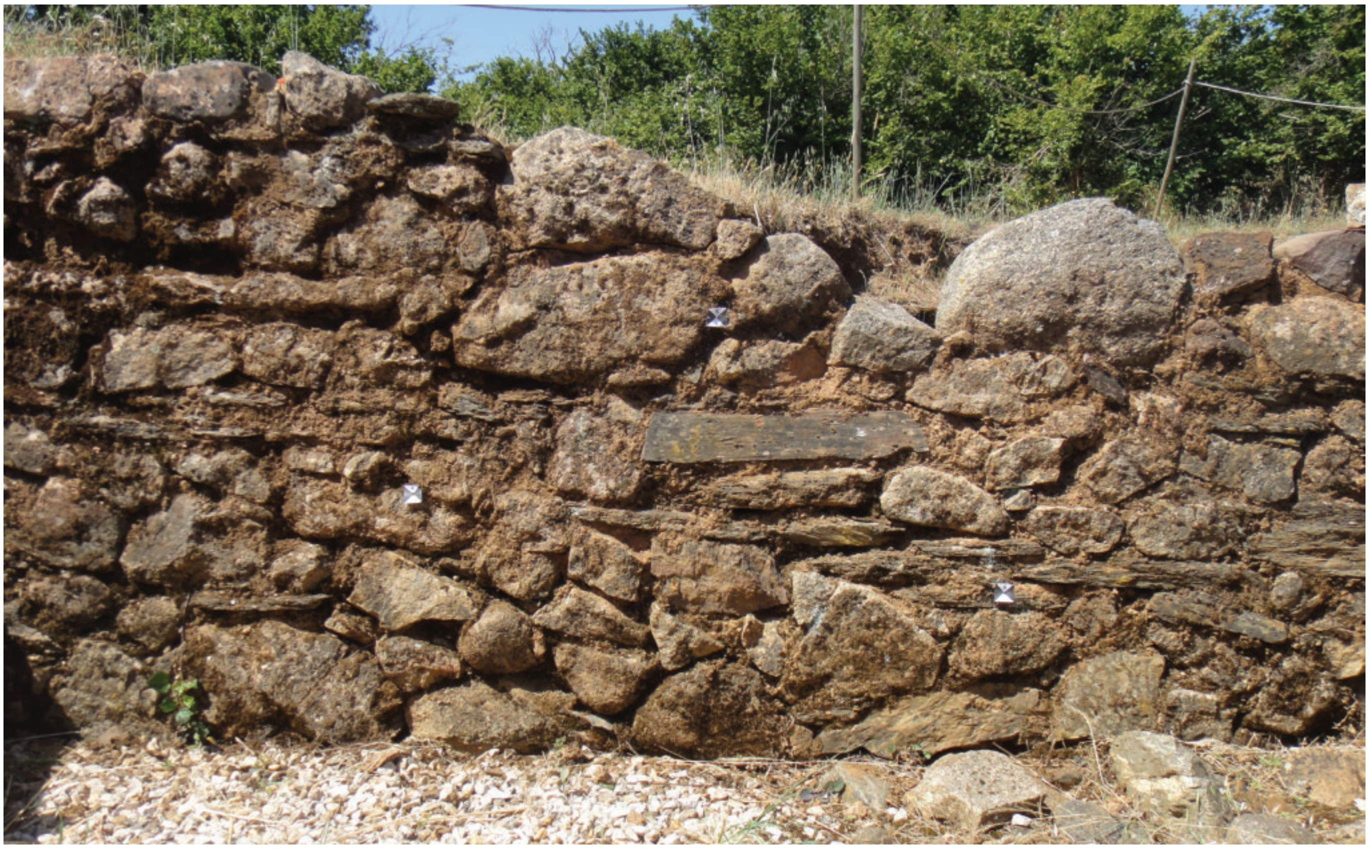

Fig. 244 *Ammaia*, Southern Gate. Sample P23 (Type IIa).

Ib, Ic, which are particularly present in the Southern Gate area and they can be attributed to the Trajan period (see chapter II.2); Type II with its variant is dated by excavation data to the fourth century (see chapter III.3).

It is necessary to advance some more general reflections to better summarize the results obtained: a tendency to regularity is attested since the first Imperial age and throughout the Julio-Claudian period as can be seen from comparisons dated and taken as guidelines, also remarked in the wall structures of the forum and baths areas of *Conimbriga* (Alarcão and Étienne 1977), but with a difference compared to *Ammaia*.

In this case, in fact, the regularity is not given by the precision of stone cutting, but by the presence of wall fillings. These wall fillings become clearer in Trajan period, when the scan module is much more accurate.

In some cases studied in Portugal, with phases dated to the fourth century, as the Roman villa of Milreu (Belido 1971) and the villa of S. Cucufate (Alarcão, Etienne and Mayet 1990), the regularity of the masonry is still very evident and the North African influence, that affects the workers in the rendering of this rhythm, characterizes many constructions of the period, but in *Ammaia* this aspect is instead completely changed and the walls of the samples show clear irregularities (Type II, IIa).

E.G.

c Concluding remarks

The town of *Ammaia* was, from the beginning and for at least two centuries, an important production centre, as the study of urban organization evidenced, characterized by the presence of an elites, while, as early as the end of the second - early third century AD, changes occurred in both the urban layout and in buildings techniques. It was possible, for instance, to observe the early spreading of reuse in public buildings, as is evident in the remodeling of the Baths. This evolution suggests important reflections on the economic changes that have affected the centre even before the general “crisis” that involved the Iberian Peninsula during the third century. The excavations have, then, highlighted a certain degree of life continuity in some areas, at least until the end of the fourth century, with a slow ruralisation process that reaches the threshold of the Middle Ages. Construction techniques record these transformations step by step, witnessing a different organization of the yard and the changing of the manpower, which at a certain stage shows a great familiarity with materials reuse. At least in the fourth century, it is clear that the conception of building has evolved toward something that follows local needs far away from the architectural canons of the classical age.

Looking more closely at results of the investigation on the walls, we can point at the distinction between an initial adoption of a construction technique characterized by mostly not squared material, but displayed with regular rows that articulate, on a regular basis, the wall texture. This peculiarity is due, probably, to several factors. First of all, the type of material available in the area: the granite, very suitable to be used in the building but not easy to manufacture because of its hardness, and schale and limestone, found in naturally stratified quarries, NW of the town. The latters, yield a material, even of small size, that can be easily used for setting courses that provide the horizontal, and then the regularity of the masonry, that is the dominant feature of mixed masonries present in *Ammaia*. There are, then, the well-known granite quarries of Pitaranha, located about ten kilometers E of the town (Taelman 2012: 21; Taelman *et al.* forthcoming), from which, for the excellent quality of the stone, were obtained the “special parts” for the architectural elements, as shown by the traces still visible in the extraction place.

For materials implementation also local craftsmen have been employed, probably technically skillful in building using naturally split or hewn materials, displayed in regular rows with an abundant use of mortar, thus saving on the squaring of the stone.

The mixed technique masonry present in *Ammaia* that looks like *opus vittatum mixtum* is very widespread, for example, in Lazio. It is characterized by a modular regularity observable in the measurements that are repeated, with slight variations, including a sort of regular courses.

So we can state that there is a prevalent technique (Type I), with a series of distinct variants, observable both in the materials used in the installation and in the composition of the materials (such as, for example, the presence or absence of bricks in the wall). We can say, then, that building technique and modality of installation was enough uniform in the town for several centuries, and only in the techniques of the fourth century (Type II) it is possible to observe a definitive abandonment of the regularity and the introduction of different materials characterized by new rules of installation.

E. D. M.

V.2 THE USE OF ORNAMENTAL STONE IN *AMMAIA*: SOME GENERAL CONSIDERATIONS

Devi Taelman

a Introduction

The *ex novo* foundation of *Ammaia* required intensive construction works in the town. A proper urbanisation programme according to Roman principles has lead to an orthogonal town plan with typical Roman buildings such as a forum, bathhouse, temples and Roman funerary monuments. The burst of building activity around the middle of the first century AD involved an enormous demand of building and ornamental stones. The building activity that started in the first half of the first century AD experienced a peak in the Flavian–Trajan period when several existing buildings were replaced by monumental, public complexes (e.g. the Baths and the Southern Gate). Architectural modifications were frequent throughout the period between the middle of the second century AD and the beginning of the fifth century AD and have been attested in most buildings.

In a region where a proper pre-Roman stone architecture was practically inexistent, the foundation of a new town inevitably implied the development of a well-organised building industry and stone supply system.

b Stone architectural decoration at *Ammaia*

The stone architectural decoration at *Ammaia* consisted essentially of wall and floor decoration, i.e. veneer panels and cornices, and column elements (monolithic column shafts, column drums, bases and capitals). To a minor extent, epigraphic monuments and statuary have been recovered at the site (sections IV.c, IV.d). Six types of stone were used for the architectural decoration at *Ammaia*: white marble, pink–purple limestone, grey–white marble, two marble breccias and granite.

Apart from the granite column elements and the granite epigraphic monuments (sections IV.a, IV.c), 1739 fragments or 3682 kg of ornamental stone have been recovered at *Ammaia* until 2012. White marble clearly forms the principal type; it outranks by far the other ornamental stones in all object categories and in all excavated sectors. It was used for wall and floor revetment, epigraphic monuments and statuary. In some cases, columns and other architectural elements such as plinths, door lintels, panels for coffered ceilings were carved in white marble. Pink–purple limestone objects also occur in considerable quantities and were exclusively used for wall and floor revetment. Grey–white marble and marble breccia are attested only rarely, and were used exclusively for veneer (Taelman).

The decorative programme at *Ammaia* was rather sober, with generally white marble. The Forum is the most sumptuous of the excavated buildings in terms of quantity and quality of ornamental stones. The Forum complex is also the area where the highest volume of ornamental stone was recovered so far (34 % of the fragments) and it is the only excavated zone where all types of ornamental stone were combined. White marble is clearly dominant. In addition, a considerable amount of pink limestone can be found; the rest is grey–white marble and marble breccia.

Apart from the Forum area, the Baths of the Forum yielded a considerable amount of ornamentals stone (32 % of the fragments). Except for five small fragments of grey–white marble, only white marble was found here, including nine *in situ* preserved wall and floor veneer panels of one of the Baths' pools (Fig. 245).

The excavated area of Block XXXVIII, the suburban area East of the town and the Southern Gate yielded, respectively, 5 %, 8 % and 13 % of the total amount of ornamental stone finds. The remaining 8 % of the finds are objects of which the exact archaeological provenance is unknown. Even though white marble is again dominant in the Southern Gate area, the high volume of pink limestone is remarkable here.

The polychromatic effect created by applying different types of coloured ornamental stones in combination with white marble as observed for the Forum area and to a lesser extent also for the Southern Gate can be considered an imitation of polychromatic veneer decoration observed in many monumental, public buildings (especially fora and theatres) in towns in the western and southern part of the Iberian Peninsula, such as *Augusta Emerita*, *Bilbilis*, *Colonia Patricia*, *Caesaraugusta* and *Italica*. For example, in the theatre and the *Portico del Foro* of the municipal forum of *Augusta Emerita,* white marble capitals and grey–white and grey column shafts from the Estremoz Anticline were combined with wall and floor veneer in pink–purple limestone from Alconera, *africano*, *giallo antico*, *cipollino verde*, *portasanta* and possibly also *pavonazzetto* (Lapuente *et al.* 1999:

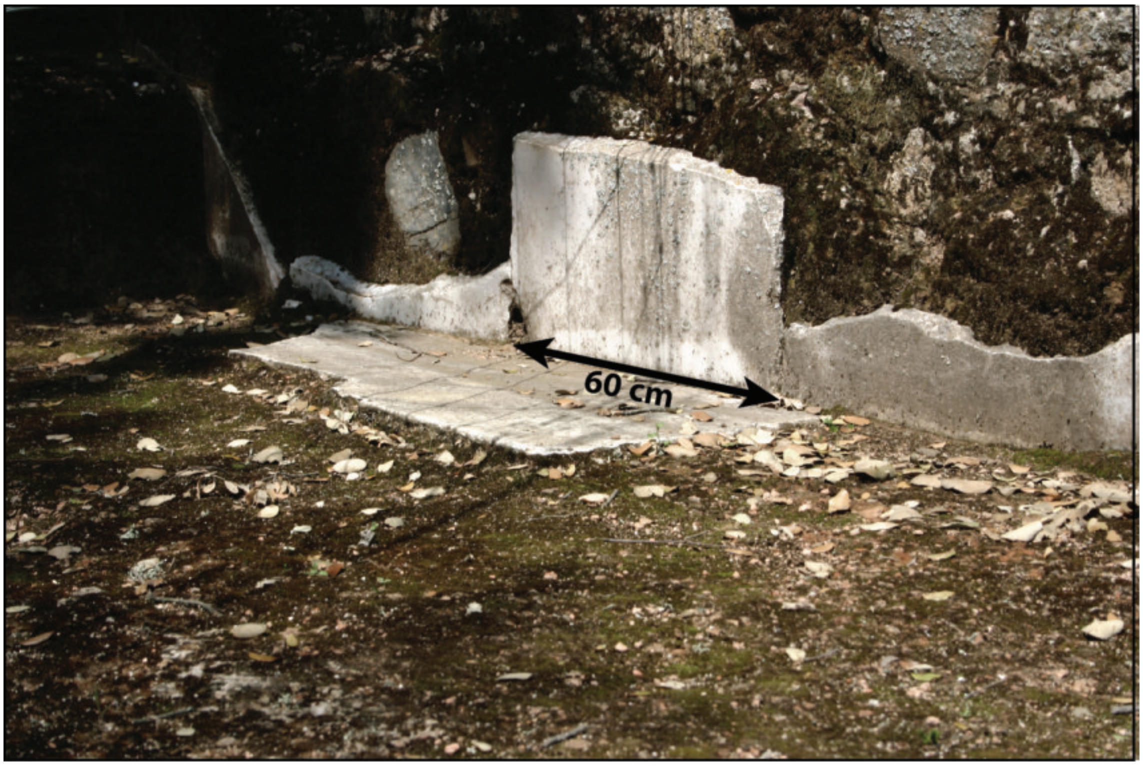

Fig. 245 Veneer panels in white marble for the wall and floor decoration of the excavated pool in the Baths.

112-115, De la Barrera 2000: 149, 195-196; Fusco and Manãs Romero 2006: 30; Ayerbe Vélez, Barrinhos Vera and Palma Garcia 2009: 551-553, 559-560; Nogales Basarrate, Rodrigues and Lapuente 2009: 435 2009: 435). In addition, some of the white marble cornices of the *Portico del Foro* of the municipal forum were painted red to imitate *rosso antico* or *marmor Taenarium* and to further enhance the polychromatic effect.

Stone characterisation and provenance determination

The **granite** is a peraluminous, pale brown, medium-grained two-mica granite (brown to reddish brown biotite and muscovite) with sodium-rich plagioclase, quartz and K-feldspar. Accessory minerals include zircon and rare traces of magnetite. Macroscopic and petrographic observations in combination with a geoarchaeological study of the hinterland of *Ammaia* have illustrated that the *Ammaia* granite was obtained in the immediate surroundings of the town at the quarry of Pitaranha, located less than 10 km from the town (Taelman 2012: 21-22).

The **white marble** (Fig. 246A) is fine- to medium-grained and has a sacharoidal texture, making it ideal for high-quality carving. The colour is generally pure white or white with occasional coloured veins or streaks (red, green, brown and grey). Some pieces show a light pink shine. Petrographic and geochemical analyses of the white marbles indicate the Estremoz quarries (Portugal) as the most likely source. (Taelman *et al.* 2013b).

The **pink–purple limestone** (Fig. 246B) is a fine-grained limestone with a dominant pink colour and frequent white streaks and dark-coloured, carbon stylolites that can be attributed to a pink–purple limestone variety quarried in Alconera (Spain).

The **grey–white marble** (Fig. 246C) is a medium-grained marble with sacharoidal texture. The rock is characterised by abundant (dark) grey veins alternating with white-coloured zones, giving the stone a distinctive colour palette. Comparison of the mineralogical–petrographic features of the archaeological samples with samples of grey–white marble taken from the outcrops (see Taelman *et al.* 2013a) revealed a high degree of resemblance, suggesting the Estremoz Anticline as the source for the grey–white marble from *Ammaia*.

The final ornamental stones are two types of monomict, matrix-supported **breccia** with poorly sorted clasts of white marble, sometimes with a light pink–red shine (Fig. 246D). The matrix is compact, fine-grained and dark brown to grey. The clasts have a maximum size between 0.4cm and 8.0cm, are angular and have sharp and clear boundaries. The clasts are sometimes sheared. The marble breccias from *Ammaia* can be identified as *africano* from Teos in Turkey and *breccia di Sciro* (for the breccia's with sheared clasts) from the Greek island of Skyros (Price 2007: 129, 136).

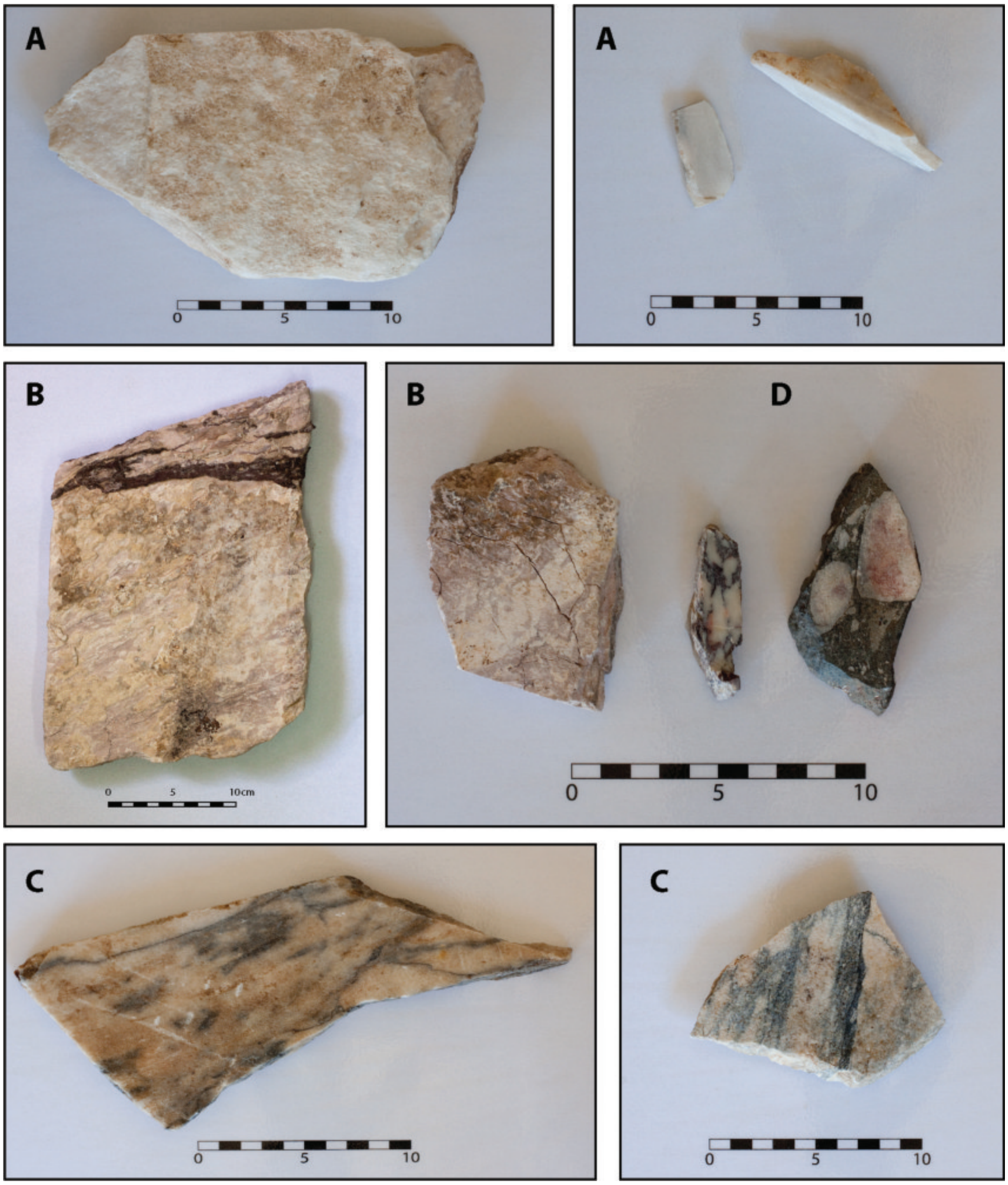

Fig. 246 Overview of the different varieties of ornamental stones used in *Ammaia*: (A) White marble (Estremoz Anticline); (B) Pink limestone (Alconera); (C) Grey–white marble (Estremoz Anticline); and (D) Marble breccia (left: *breccia di sciro*; right: *africano*).

Chronology

Because of limited stratigraphic information for the earlier excavations, little chronological information is available for the introduction of ornamental stone in *Ammaia*. While some well-dated objects such as epigraphic monuments and statuary give a rough indication, the situation for the veneer decoration is less clear. Wall and floor veneer was generally the last element to be added to a building. In some cases, it was even applied or replaced in significantly later times.

The marble epigraphy and the statuary illustrate that ornamental stone, in particular white marble, was introduced in *Ammaia* at the latest in the Claudian period, not long after the foundation of the town. The earliest evidence for white marble is a commemorative inscription dedicated to the Emperor Claudius (AD 44–45) and a togate statue probably representing young Nero (*c*. AD 50; see section IV.d). Other evidence for the early use of marble can be seen in the Baths, where several recuperated fragments of white marble veneer panels were reused for the construction of the Flavian bath complex.

The use of ornamental stone was attested particularly in the Flavian and early Antonine period. In this period, the decoration of the newly built thermal complex and the monumentalisation of the Southern Gate used large volumes of ornamental stone. The epigraphic monuments also illustrate the peak of marble use in the Flavian and early Antonine period. Most marble inscriptions date between the second half of the first century AD and the first half of the second century AD.

Finally, the ornamental stone finds from the excavations of the residential area of Block XXXVIII indicate that ornamental stone, particularly white marble, was used well into the fourth and even the beginning of the fifth century AD. It needs to be noted that many finds of the last occupation phase might have been reused from earlier, abandoned buildings.

c Conclusions

Notwithstanding that *Ammaia* was well provisioned with good-quality building stones in its immediate surrounding (Taelman *et al*. 2012; Taelman *et al*. forthcoming), it lacked any outcrops of ornamental stone. Hence, ornamental stone had to be imported.

Six types of stone were used to embellish the architecture at *Ammaia*. Granite was the principal stone for the production of columns and column elements. White marble formed the most important ornamental stone, followed by pink limestone. Grey–white marble and the two marble breccias were imported only in marginal quantities. Macroscopic, petrographic and geochemical analyses have illustrated that most ornamental stones used for embellishing the architecture in *Ammaia* were obtained from formations in the western part of the Iberian Peninsula. White and grey–white marble were quarried in the Estremoz Anticline (Portugal), located only 70 km south of *Ammaia*. The pink limestone originates from the Alconera quarries (Spain), located in the north of the ancient Roman province of *Baetica*, about 55 km south of *Augusta Emerita*. The only Mediterranean imports thus far observed are *africano* and *breccia di Sciro*.

Despite the use of predominantly regional stones, the large volume of stone material and its presence in both public and private contexts is an index of the town's prosperity and wealth. Local elite families no doubt played an important role in the embellishment of the town. Donating marble decoration was a common form of private benefaction in Roman society, and was used for propaganda reasons by wealthy individuals to increase their social and political prestige in the local community (Fant 1988: 149; Cisneros 1997: 199-200; Pensabene 2004: 43; Zuiderhoek 2009: 119). While the presence of a considerable amount of ornamental stone suggests that the town and its inhabitants were relatively well off, the low volume and limited range of imported stone is striking and can be explained in that the import of ornamental stones in *Ammaia* was not primarily determined by the economic power of its inhabitants but, rather, by the remote geographical location of the town and the financial burden related to the long-distance overland transport that was required to reach *Ammaia*. The importance of transport also explains the popularity of veneer in *Ammaia*. While fragile and bulky goods, such as columns and statuary, involve great technological and practical difficulties for transporting, veneer could be brought to the town as standardised blocks that were sawn up on the construction site (Ward-Perkins 1951: 90; Dodge 1991: 37). This also explains why the local granite remained the preferred raw material for architectural elements like columns and capitals (Taelman *et al*. 2012: 119; Taelman *et al*. forthcoming). Importing marble for these heavy and bulky goods must have been a too large financial burden.

V.3 THE FINE WARES

José Carlos Quaresma

a Introduction

This study about the fine wares from *Ammaia*, concerning the Baths, Forum and Southern Gate sectors, was focused on three typologies, chosen because they deliver three kinds of very important information: typological chronology, stratigraphical chronology and trade/consumption analyses. Therefore, we decided to study not only the most attested fine ware, i.e. *Terra Sigillata*, but also thin walls and lamps[1]. This allowed us to cross statistical and chronological data about table fine wares, for drinking and eating, with that one concerning private and public illumination tools.

Even at first sight, a strong economic connection to the Lusitanian capital, *Augusta Emerita*, was easily perceptible in the whole of the fine wares, and it was therefore crucial for the understanding of the town's regional dynamics to take into account the three groups. Interestingly, we were able to isolate a specific thin walls' production, characterised by grey clays and grey or orange surfaces; it looked like a regional production from the western part of the Iberian Peninsula, namely the south-western area.

Regarding the methodology applied in the quantification, we have used the indications published by Raux (1998) and Hesnard (1998) for the implementation of two main concepts: number of fragments (Frags.) and Minimal Number of Individuals (MNI). Our quantification has concluded the following amounts: 3226 fragments and 1398 individuals of *Terra Sigillata*; 617 fragments and 220 individuals of thin walls; and 748 fragments and 326 individuals of lamps. A fourth type, intimately related to the African *Terra Sigillata*, was recorded, attested only by one fragment (= one individual) of African cooking ware.

b Thin walls' and lamp's fabrics

If *Terra Sigillata*'s fabrics are widely known, both those from the Early-Empire (Italic, South-Gaulish and Hispanic origins) and from the Middle Empire and Late Antiquity (African and Late Hispanic origins), one cannot say the same about thin walls and lamps, specially this last type, which is commonly published according to its typology, but rarely specifying and quantifying its geographical origins. Therefore, it is crucial to present the visual characteristics of their clays and surfaces (and slips), which were observed by a magnifying lens (8 + 10x) and a binocular lens.

Regarding thin walls we have the following fabrics (colours with codes of Cailleux s.d.):

- Italic: thin clay (M73[2]) with fine, well distributed inclusions. Surface with the same colour, that presents traces of P53/P55.
- Baetican, coastline: thin clay (L70), with rare inclusions (sometimes iron particles). Slip, often not preserved, is similar to that one from *Baetica*.
- Baetican: slightly porous clay (M50), coarser than the one from the coastline. Limestone inclusions are visible and well distributed. Slip with colour P15/P17, slightly brilliant.
- Hispanic: Group 1a has grey clay and grey surface. Groups 1b and 1c have grey clay and orange surface or orange slip, respectively). This group (also attested among lamps from *Ammaia: infra*) seems to have connections to some fine coarse wares with grey clays and surfaces from the South-west Iberian Peninsula and namely the central and North-eastern Alentejo. In addition to the vessels from the necropolis (Nolen 1985: fig. 23), Elva's region seems to concentrate these fabrics (Martín Hernández and Rodríguez Martín 2008: 385).
    - Group 1a: Slightly porous, grey clay (N73). Small and well distributed dark inclusions.
    - Group 1b: Slightly porous, grey clay (N73). Small and well distributed dark inclusions. Orange surface (M45).
    - Group 1c: Slightly porous, grey clay (N73). Small and well distributed dark inclusions. Orange slip (M45).
- *Augusta Emerita*: Coarser clay than the Baetican one. Colour L70/L71, sometimes whitish in the later fabrics. It contains a stronger amount of vacuoles and inclusions. Slip M77 and M77 with dark nuances, or P39/M37. Rarely P45 with metallic reflexes.

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[1] A preliminary study on the *Terra Sigillata* from *Ammaia* (based on a smaller sample) was the object of a master thesis of V. Pereira (2006), while the fine wares from the Southern Gate are presented in a paper by Quaresma (2010-2011).

[2] For the encoding of colours, the first code refers to Cailleux s.n., the second to Munsell 1994.

Regarding lamps we have the following fabrics.

- African: Clay M45 with quartz and some granulometry. Surface N25.
- Late African (Central Tunisia) lamp has the same fabric than the African *Terra Sigillata* C (*Atlante* I 1981. Bonifay 2004).
- Baetican, coastline: fabric is similar to the thin walls' one. Fine clay L70/71. Rare inclusions (with iron). Slips are nor preserved.
- Baetican: Clay of colour L50 with high percentage of well distributed, middle-sized inclusions (limestone). Slip of colour P15/P17.
- Hispanic. Lamps include a second main group with brown-orange clays and a minor amount of lighter clays:
- Group 1a: Slightly porous, grey clay (N73). Small and well distributed dark inclusions.
- Group 1b: Slightly porous, grey clay (N73). Small and well distributed dark inclusions. Orange surface (M45).
- Group 1c Slightly porous, grey clay (N73). Small and well distributed dark inclusions. Orange slip (M45).
- Group 2a: White or white-cream clay (L70/L71). It contains few, small vacuoles and small inclusions, namely dark mica and feldspar.
- Group 2b: Brown-orange clay (N55/N57/M57) with small granulometry. Small inclusions are frequent: limestone, dark mica, feldspar.
- Group 2c: White-rose clay (K50/51). Clay has small granulometry, but small dimension inclusions in a high amount: limestone, dark mica, feldspar.
- *Augusta Emerita*: Fabric is similar to the tin walls' one. Coarser clay than the Baetican one. Colour L70/L71, sometimes whitish in the later fabrics. It contains a stronger amount of vacuoles and inclusions. Slip M77 and M77 with dark nuances, or P39/M37. Rarely P45 with metallic reflexes.

c **Forum** (see Fig. 46)

As anticipated, *Ammaia*'s Forum is the urban sector that has been less excavated among the several available areas. This explains the poorest assemblage in our study: 117 sherds and 46 individuals (MNI). The analysis of the collection from the Forum has led us to results that have strong similarities with those from the Baths (*infra*). At the Forum the Italic *Terra Sigillata* achieves the percentage of 15.2 %, the South-Gaulish one remaining in the second place (23.9 %), after the Hispanic production from La Rioja (32.6 %). The other Hispanic centres (Andújar and Granada) remain at a sporadic level with 2.1 % each one (Tabs. 1, 2).

Italic imports, typologically diversified, show a certain antiquity due to the presence of types *Conspectus* 21, 22 and 24, whose chronologies span from the first half of the first century AD, their beginning belonging to the Augustan period. In spite of the short dimension of this assemblage, we must stress the lack of later types from the first century AD, as forms *Conspectus* 18 or 23. Nevertheless 2 vessels may belong to this last type (Ettlinger *et al*. 1990: 88-94).

The South-Gaulish assemblage is also diversified and it is constituted by almost exclusively pre-Flavian types, except forms Drag. 35 and 27c. Nevertheless rims from this last type belong maybe to Drag. 27b type with round lip (Passelac and Vernhet 1993. Genin 2007). La Rioja (Hispanic centre) seems to have a similar tendency, Drag. 37b being the single form whose chronology is certainly Flavian (Mayet 1984: 84). The same phenomenon must characterise the Baetican imports of *Terra Sigillata* from Andújar and Granada, despite the Hispanic morphology of the Drag. 15/17 from the first production centre which may give it a later chronology.

In the collection of thin walls (Tab. 3) we find three productions areas (*Baetica*, *Augusta Emerita* and *Hispania*) and a single type, Mayet 37. The Hispanic vessel belongs to our fabric 1a, with grey surface, without slip. During this phase *Ammaia*'s Forum has received a scarce quantity of lamps (Tab. 4), which were imported from *Baetica* and the Lusitanian capital, *Augusta Emerita*. Type Dressel 16 / Deneauve 5D (no. 6) was produced in the first mentioned region and it has a shoulder decorated with small and simple ovules.

Type Dressel 28 (no. 7) presents some peculiar attributes when compared with the rest of the assemblage from *Ammaia*. The discus and the shoulder are separated by two off-sets and two well impressed grooves, while the other lamps from *Ammaia* present a single large off-set. Nevertheless lamps of this type Dressel 28 with two off-sets have been published elsewhere (Bussière 2000: no. 3471; Deneauve 1969: type VIII). The preserved decoration on the discus of no. 7 is not enough for its classification, but it may be a vegetal motif. This palm leaf, being common in the Lusitanian capital production centre. is also an inkling of the possible relation between *Ammaia*'s Hispanic group 2a and *Augusta Emerita*, that can be its origin. Nevertheless this can be only ensured by future laboratory analysis.

During the later phase, somewhere between AD 160 and 400, a vessel of type 74 from *Terra Sigillata luisante* has arrived to the Forum. It's a *gobelet* with globular wall and its rim may belong to sub-type 74c that has a handle (Raynaud 1993).

The African *Terra Sigillata* C is the second strongest production in the Mid- and Late-Empire (8.6 %). Its repertoire formed by types Hayes 45A, 50A and A/B gives a chronology to this commerce from the second half of the third to

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Italic	Consp. 20	1	1	7	15:02
	Consp.21.1	1	1		
	Consp. 22	1	1		
	Consp. 22 or 23	2	2		
	Consp. 22.1	1	1		
	Consp. 24.1	1	1		
	Unc.	14			
South-Gaulish	D15/17	1	1	11	23:09
	D24/25	2	2		
	D27	1	1		
	D27b	1	1		
	D27c	2	2		
	D30	1	1		
	D35	1	1		
	Plat	1	1		
	Cup	1	1		
	Unc.	16			
Hispanic-La Rioja	D15/17	8	4	15	32:06:00
	D24/25	1	1		
	D27	4	3		
	D30	3	3		
	D37b	1	1		
	Plat	1	1		
	Cup	2	2		
	Unc.	11			
Hispanic-Andújar	D15/17	1	1	1	2:01
Hispanic-Granada	Plat	1	1	1	2:01
African C	H45A	1	1	4	8:06
	H50A	1	1		
	H50A/B	1	1		
	H50	1	1		
	Unc.	16			
African D1	H58	3	3	5	10:08
	H67	1	1		
	H67B	1	1		
	Unc.	7			
Late Hispanic -Douro	Non id.	2	1	1	2:01
Luisante	Form 74	1	1	1	2:01
	Unc.	1			
Total		117	46	46	100

Tab. 1 Quantification of the *Terra Sigillata* from the Forum.

Production	Potter	Stamp	Impression	Type
South-Gaulish	SALVETVS	]ALVETV	Rectangular with round minor sides	Unc.
Hispanic-La Rioja		Unreadable	Rectangular with round minor sides	Cup
	LVPIANVS	OF.[ ]LVPI	Rectangular with round minor sides	D15/17

Tab. 2 Potters' stamps from the Forum.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Baetica	Unc.	1	1	1	25
Augusta Emerita	Mayet 37	2	2	2	50
	Unc.	3			
Hispania	Mayet 37	1	1	1	25
Total		7	4	4	100

Tab. 3 Quantification of the thin walls from the Forum.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production	Obs.
Baetica, coastline	Dressel16/ Deneauve 5D	1	1	1	25	
	Unc.	1				
Augusta Emerita	Volutes	1	1	1	25	
	Unc.	1				
Hispania	Dressel 28	1	1	2	50	group 2a
	Discus-derived	1	1			group 2a
Total		6	4	4	100	

Tab. 4 Quantification of the lamps from the Forum.

the first half of the fourth century. The fourth and the beginning of the fifth century are represented by the strongest production, African *Terra Sigillata* D1, with 10.8 % and types Hayes 58 et 67B (no. 5). To this phase belongs also a fragment of late Hispanic *Terra Sigillata* from Douro's valley (Hayes 1972; Paz Peralta 2008).

Table 5 refers to the finds collected in squares 1101 and 1201 during the excavations 1994-1998, in a series of levels interpreted as a roof's destruction with tiles and roof-tiles. The oldest level seems to belong to the Early-Empire, with productions from La Rioja and South-Gaul. The collapse of the roof could have happened in the second half of the third century, considering that no sherds of African *Terra Sigillata* D1 have been recovered (but of course, the *argomentum ex silentio* in archaeology has to be handled with care!). The most recent layer, covering the roof collapse debris, is given a *terminus post quem* by this production (Hayes 58 and 67, common types of the second half of the fourth century and the beginning/first half of the fifth century: Hayes 1972) (no. 4).

d **The Baths** (see Figs. 79-87)

The excavations in the Baths of *Ammaia* have produced important statistical and typological results about the Early Imperial fine wares, while Late Roman fine wares are scanty in this sector.

The statistical results from the Baths' sector show the importance of the third quarter of the first century AD in this area. The greatest percentage of South-Gaulish *Terra Sigillata* has been recorded here, whereas the Hispanic production has achieved only the second place, which is unusual in *Ammaia* if we compare it to the statistics of the Southern Gate (Tab. 6).

The Italic *Terra Sigillata* (nos. 21-24, 32, 45, 51, 57-59, 78, 80, 93-95, 117, 118, 122, 123) strengthens also its values (6 %) and comprises a diversified assemblage, in which we can stress the earliest types as forms *Consp*. 12.3 and 32 (?) and other later types as *Consp*. 18 (?) and 20 (Ettlinger *et al*. 1990: 72 *et passim*). It is also in this sector that the Late Italic *Terra Sigillata* has been recorded through

Layer	Typology	Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Beneath the roof's destruction layer with *imbrices* and *tegulae*	*Terra Sigillata*	South-gaulish	D15/17	1	1	2	25
			D24/25	1	1		
		Hispanic-La Rioja	D15/17	3	3	4	50
			Cup	1	1		
			Unc.	2			
		Hispanic-Andújar	Plat	1	1	1	25
	Thin walls	*Augusta Emerita*	Unc.	2	1	1	
	Total			**11**	**8**	**8**	**100**
Roof's destruction layer with *imbrices* and *tegulae*	*Terra Sigillata*	South-gaulish	D27c	1	1	1	50
		African C	H50A	1	1	1	50
			Unc.	1			
	Total			**3**	**2**	**2**	**100**
Above the roof's destruction layer with *imbrices* and *tegulae*	*Terra Sigillata*	Hispanic-La Rioja	Unc.	1	1	1	25
		African C	H50A/B	1	1	1	25
			Unc.	1			
		African D1	H58	1	1	2	50
			H67	1	1		
	Total			**5**	**4**	**4**	**100**

Tab. 5 Stratigraphic quantification of the square 1001 (Forum).

a single cup (0.2 %), likely dated to the first century (Sepúlveda 1996: 13). In the Claudio-Neronian layers we have recorded an *in planta pedis* stamp which has been produced starting in Tiberian period (Tab. 7; see nos. 21, 117, 118).

The South-Gaulish *Terra Sigillata* from La Graufesenque (nos. 3-5, 7-10, 14, 15, 18, 19, 25-29, 33, 38-41, 52-54, 60-64, 66, 67, 81, 88, 96-105, 119, 120, 124, 134, 137-139) reaches strong percentages (50 %) which stake out the importance of this production in this sector. It comprises a diversified repertoire, above all plain, but which contains both plain and decorated less common forms. This is the case of earlier types as Drag. 16 and 19, Flavian types as Vertault A and Service D1 and the decorated vessel Déch. 67 with a roulette under the angle of the wall. We must stress also the single vessel from Montans found in *Ammaia*: a wall of Drag. 30a with a likely scroll dated from the splendour period, that is AD 40-60 (Passelac and Vernhet 1993; Tilhard 2004: 411).

Two South-Gaulish stamps have been recorded in the Claudio-Neronian layers (Tab. 7; see nos. 18, 19, 20 of catalogue at chapter II.6 for details).

The rare Hispanic *Terra Sigillata* "precoce" (0.4 %) belongs also to the first century AD and is attested in *Ammaia* by a single type – form 3 of Martínez Rodríguez 1989 (no. 177). This Hispanic trade is largely dominated by La Rioja, which is the second most important production centre in this sector with 36 % of the fine wares from the Early-Empire (nos. 17, 46-48, 65, 79, 89, 90, 121, 125, 126, 131, 135, 145, 174, 175). From this *Tarraconensis* assemblage we must point at some types as Drag. 18, 46, Hisp. 2, 4, 10, 12 and 78, which are absent in the Claudio-Neronian and Flavian stratigraphy's. Curiously this trade is largely dominated by the cup Drag. 27, being the plate Drag. 15/17 much more rare. The residuality is quite strong among the assemblage from Andújar (66 %) (nos. 82, 178-180), whose role is much less important than the trade from La Rioja. Types Aj.3, Drag. 15/17, 24/25, 29, 30, 33, 37, 37a, 37b and Hisp. 10 are absent in the mentioned levels from the Early-Empire. This residuality has been recorded also among the imports from the Lusitanian capital, *Augusta Emerita* (0.4 %) whose type Drag. 27 has been recorded in the latest levels from the fifth century.

A huge amount of sherds from La Rioja has been recorded in Late Roman levels of *Ammaia*'s Baths, but all these fragments present the same fabric and slip features with reddish colours that we find in the Early-Empire production. The morphological features show the same phenomenon, which allows us to conclude that this commerce likely does not exceed the second century AD.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Italic	*Consp.* 12.3	1	1	30	6,00
	Consp. 18?	1	1		
	Consp. 19	1	1		
	Consp. 20	2	2		
	Consp. 20 or 21	3	3		
	Consp. 21	2	2		
	Consp. 21.1	1	1		
	Consp. 22	7	7		
	Consp. 22?	2	2		
	Consp. 23	2	2		
	Consp. 27	1	1		
	Consp. 31	1	1		
	Consp. 32?	1	1		
	Consp. 33	3	2		
	Cup	3	3		
	Unc.	21			
Late Italic ?	Cup	1	1	1	0,20
South-gaulish-La Graufesenque	D15/17	6	6	250	50,00
	D16	3	3		
	D19	1	1		
	D18	16	16		
	D24/25	71	57		
	D27	34	31		
	D27a	1	1		
	D27b	24	24		
	D27c	28	28		
	D29	6	4		
	D30	3	3		
	D33	1	1		
	D35	2	2		
	D36	2	2		
	Déch.67	1	1		
	Closed shape	1	1		
	Plate	17	17		
	Ritt.1	2	2		
	Ritt.5	2	1		
	Ritt.5a	1	1		
	Ritt.5c	7	4		
	Ritt.8a	1	1		
	Ritt.9b	2	2		
	Service D1	1	1		
	Cup	39	39		
	Vertault A	2	1		
	Unc.	89			

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
South-gaulish-Montans	D30a	1	1	1	0,20
Hispanic-"precoce"	Type III	2	1	2	0,40
	Type III?	1	1		
	Unc.	2			
Hispanic-La Rioja	D15/17	28	19	180	36,00
	D18	2	1		
	D24/25	8	4		
	D27	108	65		
	D30	2	2		
	D35	20	20		
	D36	8	8		
	D37	3	1		
	D37a	3	3		
	D46	1	1		
	Hisp. 2	6	3		
	Hisp. 4	1	1		
	Hisp. 5	1	1		
	Hisp. 10	4	4		
	Hisp. 12	1	1		
	Hisp. 78	1	1		
	Plate	14	14		
	Cup	31	31		
	Unc.	246			
Hispanic-Andújar	Aj.3	1	1	33	6,60
	D15/17	2	1		
	D24/25	1	1		
	D27	10	7		
	D29	1	1		
	D30	1	1		
	D33	1	1		
	D35	6	6		
	D37	2	2		
	D37a	1	1		
	D37b	1	1		
	Hisp. 10	1	1		
	Plate	5	5		
	Cup	5	4		
	Unc.	21			
Hispanic-*Augusta Emerita*	D27	2	2	2	0,40
Hispanic-unc.	D27	1	1	1	0,20
Total		**972**	**500**	**500**	**100,00**

Tab. 6 Quantification of Early-Imperial *Terra Sigillata* from the Baths.

Production	Potter	Stamp	Impression	Type
Italic	ATEIVS	ATEI	Rectangular with round minor sides	Cup
	CNEVS ATEVS	CN.[	Rectangular	Unc.
			In planta pedis	Unc.
Late Italic ?	SPECVLATOR	SPECL	Rectangular	Cup
South-Gaulish		OF[	Rectangular with round minor sides	Cup
		]I	Rectangular with round minor sides	Plat
		Unreadable	Rectangular with round minor sides	Cup
		Unreadable		Cup
	FIRMVS i	FIRMO	Rectangular with round minor sides	Cup
	GALLICANVS ii	]ICANI	Rectangular with round minor sides	Unc.
	IVNVS	OF.IVNII	Rectangular	Drag. 24/25
	MVRRVS ou MVR-	]MRI	Rectangular with round minor sides	Cup
	MVRRVS ou MVR-	]MV (?)	Rectangular with round minor sides	Cup
	PASSENVS?	]SM	Rectangular	Cup
	PRIMVS	OF.PRIM[	Rectangular with round minor sides	Cup
	SUCCESSVS	]SVCCES	Rectangular with round minor sides	Cup
Hispanic-La Rioja		]V	Rectangular with round minor sides	Plate
		O[(?)	Rectangular with round minor sides	Unc.
		]I	Rectangular	Cup
		IIX[	Rectangular with round minor sides	Unc.
	C.IAEG.L.O	]EIIG.L.O	Rectangular	Plate
	C.S. ou C ( ) S ( ) TRITIENSIS	OF.2[?	Rectangular	Drag. 35
	CIAECIO	]EIICIO	Rectangular	Plate
	IANVARIVS	O.IAN[	Rectangular	Plate
	TREBIVS TRITIENSIS	]TBRI	Rectangular with round minor sides	Cup
Hispanic-Andújar		OF[		Plate
	SEMPRONIVS	OF.SEM	Rectangular	Cup
		Unreadable	Rectangular with concave minor sides	Plate

Tab. 7 Early-Imperial *Terra Sigillata*'s potter stamps from the Baths.

Class	Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Sigillate	African A	Non id.	1	1	1	20
	African A/D	H31	1	1	1	20
	African C	H50B	1	1	1	20
		Unc.	3			
	Late Hispanic -Douro	Unc.	1	1	1	20
African cooking ware	Northern Tunisia - slip A2	H181B (Bonifay, 2004, p.214)	1	1	1	20
Total			**8**	**5**	**5**	**100**

Tab. 8 Quantification of Late Antique *Terra Sigillata* and African cooking ware from the Baths.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Italian?	Unc.	1	1	1	0,8
Augusta Emerita	M36	2	1	105	87,5
	M36 or 37	24	24		
	M37	57	57		
	M37b	2	1		
	M38	13	13		
	M38?	1	1		
	M40 or 42	1	1		
	M43	11	5		
	M49	2	2		
	Unc.	321			
Baetica	M36	2	1	4	3,3
	M37	2	1		
	M38	1	1		
	M43	1	1		
	Unc.	6			
Baetica, coastline	Unc.	1	1	1	0,8
Hispania	M36	1	1	9	7,5
	M36 or 37	3	3		
	M37	2	2		
	M38	1	1		
	M38?	1	1		
	M40 or 42	1	1		
	Unc.	21			
Total		**478**	**120**	**120**	**100**

Tab. 9 Quantification of the thin walls from the Baths.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Augusta Emerita	Discus-derived type	1	1	189	74,7
	Den. 5G	3	2		
	Discus	85	85		
	Dr. 16/Den. 5D	5	5		
	Dr. 20	1	1		
	Dr.3	1	1		
	Dr. 9	1	1		
	Dr. 9A	1	1		
	Volutes	140	92		
	Unc.	298			
Baetica	Volutes	9	5	8	3,1
	Discus	2	2		
	Den. 5F	1	1		
	Unc.	5			
Baetica, coastline	Unc.	8	7	22	8,6
	Discus	1	1		
	Dr. 16/Den. 5D	2	2		
	Dr. 20	1	1		
	Dr. 3?	2	2		
	Dr. 9	2	2		
	Volutes	12	7		
Hispania	Discus-derived type	2	1	31	12,3
	Den. 5F?	1	1		
	Den. 5G	1	1		
	Den.7B	1	1		
	Discus	7	7		
	Dr. 16/Den. 5D	1	1		
	Dr. 20	1	1		
	Dr. 28	10	10		
	Dr. 30	4	4		
	Volutes	6	4		
	Unc.	13			
Africa	Volutes	1	1	5	1,9
	Discus	1	1		
	Den. 7B	2	2		
	Den. 5G	1	1		
	Unc.	1			
Total		**634**	**255**	**255**	**100**

Tab. 10 Quantification of the lamps from the Baths.

Imports of African *Sigillate* A, A/D and C[3] during the period comprised between the second and the fourth century AD are scanty (Tab. 8). Moreover, we can stress that they are always found in stratigraphic units that formed in the course of the fifth century, therefore resulting residual. Thus far, the single late production that seems to be found in not residual contexts is the Late Hispanic *Terra Sigillata* from Douro's valley (Paz Peralta 2008). The same third century chronology must be given to the large plate Hayes 181B from Northern Tunisia (no. 143), a region that has traded large amounts of this cooking ware at this time (Bonifay 2004: 214). The rarity of these late productions is quite surprising taking into account that they are very well represented in the other sectors of the town.

Thin walls from the Baths (Tab. 9) are dominated by *Augusta Emerita* (87.5%) and the main types are Mayet 36 or 37 and 37, whereas Mayet 43 is a secondary vessel (nos. 12, 16, 20, 30, 31, 35, 42, 43, 55, 68-74, 83, 106-110, 127-129, 132, 133, 136). The Baetican region (no. 44) and its coastline (no. 50) have supplied 4.1% of the lamps, being the first region clearly superior. *Baetica* comprises the same principal forms than *Augusta Emerita*, but it includes type Mayet 43 which is usually described as a vessel from this last centre (Mayet 1975). *Hispania* as a general provenance is the second most important area for thin walls with 7.5% and a generically similar repertoire. In the total of 30 sherds, group 1a (grey surface) is present with 9 fragments and group 1b (grey clay and orange surface) with 21 fragments (nos. 1, 11, 34, 49, 56, 112). Italy is scarcely represented and Italic productions might belong to the first century AD (Beltrán-Lloris 1990: 170).

Lamps (Tab. 10) are dominated by *Augusta Emerita* (74.7%), which once again shows the importance of the Lusitanian capital in the supply of lamps and thin walls to *Ammaia*. A stamp of CABINIA on a bottom of a Loeschcke 4 with a *biga* on its discus has been recorded in the third century layers, when it is already residual (Celis Betriu 2005: fig. 15, no. 109) (no. 141). In spite of earlier types as Dressel 3 and 9, scarcely represented, the largest amount of this assemblage is formed by volutes-type and discus-type lamps (nos. 76, 84-86, 141, 144). Lamps from *Baetica* (no. 87, 130) and its coastline (nos. 6, 13, 36, 37, 75, 113-115) represent 3.1 and 8.6% respectively and they have a special role in the Claudio-Neronian and Flavian layers. In this sense African types as Deneauve 5G and 7B have been recorded in the Flavian layers (nos. 77, 116). Once again the Hispanic assemblage holds an important role with 12.3% of the group (nos. 140, 142, 146-173). It appears essentially in the fifth century layers which means that some types are part of a residual process as Deneauve 5F, 5G, 7B, Dressel 16/Deneauve 5D, Dressel 20, volutes-type and discus-type. Even types Dressel 28 and 30 are residual in the fifth century layers, but they are more closely connected to later chronologies, although the third and fourth century are a proper dating for them (Bussière 2000: 25-31).

In conclusion, the excavations at the Baths have produced an important stratigraphy, specially the levels that concern the Early-Empire. In the Claudio-Neronian stratigraphic units the excavations have produced 204 fragments and 114 individuals. Regarding the *Terra Sigillata* assemblage, the main origin is the South-Gaulish area (La Graufesenque) with 69 individuals. The Italic production is in the second place with 6 MNI and La Rioja (Hispanic area) has a similar result (6 MNI). A last production is also Hispanic, the so-called "Hispanica precoce", with a sporadic 1 MNI. In the Italic assemblage the repertoire is limited (*Consp*. 19, 21 and 22), as well as in the Hispanic (Drag. 27) and in the early Hispanic – "Hispanica precoce" (Type III). South-Gaulish assemblage is diversified comprising Drag. 19, 15/17, 24/25, 27a, 27b, 30, Ritt. 1, 5c and 9b. Thin walls are headed by productions from *Augusta Emerita* (11 MNI), comprising types Mayet 36, 37, 43 and 49. *Hispania* is attested by 3 MNI (Mayet 36 and 37) and *Baetica* presents 2 MNI through a single form (Mayet 37). Lamps imports seem to be headed by the coastline of *Baetica* (8 MNI), comprising volutes-type, discus-type and Dressel 20. *Augusta Emerita* has 7 MNI, but just a single type (volutes-type). In the last place, *Baetica* presents a single, unclassified type (1 MNI).

The empirical basis increases in the Flavian stratigraphic units, in which 432 fragments and 238 MNI were recorded. Italic *Terra Sigillata* seems to increase its volume and diversify its repertoire (23 MNI shared by *Consp*. 22, 23, 32, 21, 27, 31 and 33). South-Gaulish area remains the main origin with 97 MNI and a large repertoire: Drag. 16, 15/17, 18, 36, 24/25, 27b, 27c, 35, 29, 30, "Service" D1, Ritt. 5a, 5c and 8a. La Rioja becomes finally important with 53 MNI, shared by a large repertoire (Drag. 15/17, 36, 24/25, 27, 35, 30, 37, 37a and Hisp. 5). Andújar, another Hispanic centre from Baetican area, pops up with 6 MNI (Drag. 27 and 35), whereas "Hispanica precoce" has a single MNI again (unclassified). Thin walls are now strongly headed by *Augusta Emerita* with 29 MNI (Mayet 36, 37, 38 and 43) and the other areas become clearly secondary. *Hispania* has 4 MNI (Mayet 36 or 37, 37 and 38), whereas *Baetica* has 2 MNI (Mayet 38) and its coastline an unclassified individual. Lamps' heading is divided by *Augusta Emerita* and the Baetican coastline. The first one presents only volutes and discus-types, whereas the second one presents not only these types, but also Dressel 9 and 20. *Baetica* presents 2 MNI (Den. 5F) and a new area pops up: Africa has 2 MNI (Den. 5G and 5F).

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[3] African A/D form Hayes 33 (no. 176) dates to the third century and African C form Hayes 50 dates to the third and fourth century (Hayes 1972).

The empirical basis decreases strongly in the late second/ third century: 29 fragments and 17 MNI. At that time South-Gaulish vessels are surely residual and the same conclusion is reasonable in what concerns the thin walls from *Augusta Emerita* and the lamps from this town and from *Baetica* and its coastline. Both types and shapes, as well as fabrics are still the canonical ones from the first/second centuries. Thus far, it seems that the imports of La Rioja's *Terra Sigillata*, are the only ones that can be dated to the late second / third century, but the assemblage collected here presents only shapes and fabrics from the first/second century (Drag. 24/25 and 27, Hisp. 12).

The same problem persists in the AD 225-275 layers. Among the 117 fragments and 40 MNI, just a small amount is contemporary: an unclassified MNI of African *Terra Sigillata* C, one individual of African cooking ware from Northern Tunisia (Hayes 181B) and the Hispanic lamps with 2 MNI (discus-type and Dressel 28). This large residuality remains in the fourth century levels. Among the 28 fragments and 15 MNI, only African *Terra Sigillata* C can be considered contemporary to the formation of the layer (1 MNI, unc.).

Finally, the fifth century layers show the same phenomenon. We estimate a residuality of *c*. 95 % which includes almost all origins of the three typologies recorded in the Early-Empire. Contemporary to the fifth century shall be African *Terra Sigillata* C (1 MNI – Unc.) and Late Hispanic *Terra Sigillata* from Douro (1 MNI – Unc.), as well as 4 MNI of Dressel 30 lamps from *Hispania*.

e **Southern Gate** (see Figs. 131-138)

The Southern Gate, being the area where most extensive excavations have been carried out, is the sector of *Ammaia* in which we find the most complete assemblage, both typologically and chronologically. Concerning the first century AD, among the thin walls' assemblage (Tab. 11) *Augusta Emerita* is hegemonic (83.6 %) and types Mayet 37 + 37A, 38 + 38B and 43 are the most represented forms, followed by some individuals of types Mayet 39, 40 or 42, 41 and 42. The most spread decoration style is the barbotine (50 % of the sherds), followed by the rouletted style (41 %) and the sandy style (8.9 %). This last style pops up only in unclassifiable sherds. The rouletted style has a thick impression, being fine in only 6 sherds (3 of them of Mayet 43). This decoration is related to types Mayet 43, Mayet 37 and Mayet 38B whereas barbotine style is connected with types Mayet 43, Mayet 37, Mayet 38, Mayet 37A, Mayet 38B and Mayet 42. The motifs are headed by scales, followed by barbotine dots and water leafs. This last one is related to types Mayet 38 and Mayet 37A. Barbotine dots are mainly connected with types Mayet 38B and 43, whereas scales are mainly related to types Mayet 37, 38 and 43 (1 sherd of Mayet 42). These results from Southern Gate show some differences with the published data from *Augusta Emerita*. In this town the roulette style is quite important, but scales and water leafs are connected only with types Mayet 43 and 44. Furthermore, digital impressions were not recorded in Southern Gate (Rodríguez Martín 1996: 45-47), whilst type Mayet 43 is represented by 3 sherds with scales, 3 sherds with rouletted style, 1 with barbotine dots and 4 plain. The assemblage shows therefore a preference for the two first styles and the plain walls. Even diameters seem to be different: in *Augusta Emerita* they are usually smaller (80-100mm), whereas at the Southern Gate their values range around 100-110mm[4]. The other attributes present similarities mostly with the production of *Augusta Emerita*: the rim is round, the wall is oblique, thick and carinated, having one or two outer grooves, the handle has an oblong and thin section with double longitudinal groove.

The Baetican area, the costline of *Baetica*, the Hispanic area and the Italic one are clearly secondary origins for the finds from the Southern Gate. The single individual from Italy has a sandy decoration and it is probably related to the first decades of the occupation of *Ammaia*, maybe the beginning of the first century AD (Beltrán-Lloris 1990). The Baetican vessels (nos. 13-15) are represented by types Mayet 36 and 38B and the single decoration is the barbotine style with scales (Mayet 36) and dots (Mayet 38B). Two unclassifiable sherds are decorated with water leafs (Mayet 1975: 74-79).

The Hispanic production (nos. 16-18) comprises types Mayet 37 and 38B (?). Decorations is characterised by the sandy style (Mayet 37), the barbotine one (Mayet 38B) and the rouletted style (Mayet 37). Its production features belong to our group 1 (gray clay, with or without orange slip) (Tabs. 12, 13).

The lamps' assemblage (Tab. 14) is also dominated by productions from *Augusta Emerita* (63.6 %). Volutes types and discus types are the principal forms. The first typological group is dated to the Augustan period till the beginning of the second century AD, whereas the discus types achieve the middle of the third century (Celis Betriu 2005: 420-421). Other authors like C. Pereira (Pereira 2008: 43-44) propose a different chronology: discus lamps would start already in the first half of the second century. According to Rodríguez Martín (2002: 210-215), *Augusta Emerita* has started its production during the principates of Claudius and Nero, producing types Deneauve 4A = Dressel 9C and Deneauve 5A = Dressel 11. The author proposes a second production phase, between the Neronian-Vespasian times and the first

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[4] According to Rodríguez Martín (1996: 14-16) the type Mayet 43 is characterised by a curved upper segment of its wall, characteristic which seems to be predominant at the Southern Gate, in spite of the fact that some individuals have a straight upper segment, like no. 10, decorated with scales.

Decoration	Sherds	%
Sandy	5	8,9
Barbotine	28	50
Roulleted	23	41
Total	**56**	**100**

Tab. 12 Quantification of thin walls' decoration styles from *Augusta Emerita* at the Southern Gate.

Type	Group/Individuals		Total
	1a	1c	
M37	1	1	2
M38B?		1	1
Unc.		2	2
Total	**1**	**4**	**5**

Tab. 13 Quantification of thin walls' techniques from *Hispania* at the Southern Gate.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Augusta Emerita	Dr.9C	1	1	42	63,6
	Volutes	23	19		
	Loeschcke 4	1	1		
	Discus	20	20		
	Den.5G	1	1		
	Unc.	23			
Augusta Emerita?	Discus	1	1	1	1,5
Baetica	Volutes	1	1	2	3
	CV2/3	1	1		
	Unc.	2			
Baetica, coastline	Volutes	3	3	8	12,1
	Discus	8	5		
	Unc.	9			
Hispania	Volutes	3	3	11	16,7
	Discus	3	3		
	Dr. 16/Den. 5D	1	1		
	Den. 7B	1	1		
	Discus-derived	1	1		
	Dr. 30	2	2		
	Unc.	1			
Africa-*Byzacena*	Atlante VIIIC	1	1	2	3
	Atlante VIII	1	1		
Total		**108**	**66**	**66**	**100**

Tab. 14 Quantification of the lamps from the Southern Gate.

half of the second century, whose floruit is dated to the Trajan and Hadrian times, when C.OPPI.RES or GABINIA are the principal potters and forms Deneauve 9 and 5G the principal types. A third phase begins in the middle of the second century and it is marked by the production of types Deneauve 8A = Dressel 27, Deneauve 8B = Dressel 28, Deneauve 5A, 9B and 5G. The main potter is now GES, absent in *Ammaia*, and the clay's features suffer a degradation becoming coarser and more reddish, as the local common wares. This clay is also absent in *Ammaia* (Rodríguez Martín 2002: 209; 2005: 196-197). We place therefore the beginning of this commerce at the Southern Gate's area in the principates of Claudius and Nero, according to the typological features. Nevertheless, we must stress the absence of type Dressel 3-derivated which is the second main type in the Lusitanian capital (Rodríguez Martín 1996: 143). This production centre is marked at this time by types Deneauve 5A = Dressel 1, Dressel 3-derivated, Deneauve 4 = Dressel 9, Deneauve 5G and Deneauve 5B = Dressel 12-13. This leads us to propose more precisely the beginning of this commerce at the Southern Gate during the third quarter of the first century and the end of this process in the first half of the second century. We can affirm that during several decades, maybe a century, *Augusta Emerita* has headed this consumption market, through its volutes and discus-types. Nevertheless the over-moulding has been observed just

Type	Group/Sherds			Total
	1a	1b	2b	
Volutes	1	1	1	3
Discus		1	2	3
Dr. 16/Den. 5D		1		1
Den. 7B		1		1
Discus-derived			1	1
Dr. 30		1	1	2
Unc.	1			1
Total	2	5	5	12

Tab. 15 Quantification of lamps' techniques from *Hispania* at the Southern Gate.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Italic	Consp. 15	1	1	34	4,6
	Consp. 19	3	3		
	Consp. 20	21	21		
	Consp. 22	3	3		
	Consp. 32	1	1		
	Consp. 33	1	1		
	Consp. 34	1	1		
	Consp. 4	2	2		
	Consp. R9?	1	1		
	Unc.	70			
South-Gaulish	D15/17	66	38	248	33,6
	D18	31	20		
	D22	1	1		
	D24/25	19	18		
	D27	33	27		
	D27b	7	7		
	D27c	13	13		
	D29	2	1		
	D30	12	10		
	D33	7	6		
	D35	6	6		
	D36	18	17		
	D37	1	1		
	D37a	5	5		
	D37b	3	2		
	Plate	49	48		
	R1	1	1		
	R12	2	2		
	R8	1	1		
	Cup	23	23		
	Bowl	1	1		
	Unc.	291			

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
Hispanic - La Rioja	D15/17	180	124	390	52,9
	D18	31	19		
	D24/25	1	1		
	D27	85	45		
	D30	21	21		
	D33	8	6		
	D33 or 46	1	1		
	D35	14	14		
	D36	33	33		
	D37	8	5		
	D37a	9	8		
	D37b	18	18		
	D44	1	1		
	D46	2	2		
	Hisp. 2	1	1		
	Hisp. 4	17	17		
	Hisp. 70	1	1		
	Plate	38	38		
	Cup	34	34		
	Bowl	1	1		
	Unc.	703			
Hispanic - Andújar	D15/17	29	16	58	7,8
	D18	10	7		
	D27	9	5		
	D30	2	1		
	D33	1	1		
	D33 or 46	1	1		
	D35	1	1		
	D36	5	5		
	D37	2	2		
	Hisp. 2	3	2		
	Hisp. 4	2	2		
	Plat	11	10		
	Cup	5	5		
	Unc.	142			
Hispanic - Augusta Emerita	D15/17	1	1	1	0,1
Hispanic - Granada	D15/17	1	1	6	0,8
	Plate	5	5		
Total		**2133**	**737**	**737**	**100**

Tab. 16 Quantification of Early-Imperial *Terra Sigillata* from the Southern Gate.

Origin	Type	Sherds	MNI	MNI Prod.	% MNI Production
African A	H6	1	1	2	1,7
	H27 = L9a2	1	1		
African C	H44	1	1	22	19,6
	H45	3	2		
	H45A	2	2		
	H48B	1	1		
	H50A	8	8		
	H50A/B	2	2		
	H50B	5	5		
	H53	1	1		
African D1	H58B	3	3	38	33,9
	H59	6	6		
	H59A	1	1		
	H61A	3	3		
	H63	3	3		
	H67	3	2		
	H67A	2	2		
	H67B	1	1		
	H73	1	1		
	H76	2	2		
	H91	4	3		
	H91A	1	1		
	H91B	1	1		
	Style A	3	3		
	Style A (i)-(ii)	4	4		
	Style A (ii)-(iii)	2	2		
Late Hispanic - Ebro	Ritt. 8A	1	1	2	1,7
	D27	1	1		
Late Hispanic - Douro	Lud.Tb	1	1	48	42,8
	Ritt. 8A	3	3		
	Hisp. 7a	6	6		
	Hisp. 7b	1	1		
	Hisp. 83b	3	3		
	Hisp. 82b	2	2		
	Palol 2	2	2		
	Palol 4	5	5		
	D37t	33	20		
	Style 1	2	2		
	Style 2	3	3		
Total		**128**	**112**	**112**	**100**

Tab. 17 Quantification of Late Roman *Terra Sigillata* from the Southern Gate.

Production	Potter	Stamp	Impression	Type	No.
Italian	Ateuis	]TEI	Rectangular	Unc.	
South-gaulish			Rectangular	Unc.	
	Crestus	CREST[	Rectangular	Plat	
Hispanic-La Rioja	C [-] Anius ?	OC[	Rectangular	Unc.	3
	Flaccus Tritiensis	]L CCI	Rectangular	Plate	
	Flaccus Tritiensis	FLAC[CI]TR	Rectangular with round minor sides	Plate	102
	Lapillius	LAPILLI	Rectangular with concave minor sides	Drag. 15/17	103
	Lapillius	]PILLI	Rectangular	Cup	
	MEM ( ) MI ( ) or Firmus	]MI	Rectangular	Cup	110
	S ( ) NI ( )	EX OF NSN	Rectangular with concave minor sides	Cup	
	S ( ) NI ( )	EX OF NSN	Rectangular with concave minor sides	Cup	107
	Sempronius	OF SEMPRO	Rectangular	Drag. 15/17	106
	Sempronius	OF SEMPR	Rectangular with round minor sides	Drag. 18	105
	Valerius Paternus	OFVAP[	Rectangular	Drag. 15/17	108
			Rectangular	Drag. 15/17	
		EX OF[	Rectangular	Drag. 15/17	
			Rectangular	Drag. 33	
			Rectangular	Plate	
		Unreadable	Rectangular	Cup	
		EX OF O.N	Rectangular with concave minor sides	Cup	104
Hispanic-Andújar	**NAP [-] or NPNA ?**	**]APO**	**Rectangular**	**Cup**	**111**

Tab. 18 Quantification of *Terra Sigillata's* potter stamps from the Southern Gate.

once in our volutes-type and in type Deneauve 5G, but it is more common among the discus-type (nos. 22, 24, 25).

The Hispanic (16.7 %), Baetican (3 %) and Baetican-coastline (8 %) lamps comprise volutes and discus-types, as well as Dressel 16/Deneauve 5D which are essentially contemporary to those from *Augusta Emerita* (Celis Betriu 2005: 442; Pereira 2008: 46). The two first mentioned productions spread over the second half of the second century. Among the Baetican repertoire we find an individual of CV3 – degenerate-volutes type – dated most certainly after the mid second century (Bussière 2000; Casas i Genover and Soler i Fuste 2006: 36, nos. E691-694). Bussière (2000: 24) describes type CV3 (type CV = Deneauve 5F) as a lamp with round and closed discus of the second half of the second century whereas type CV2 is a lamp with oval and open discus of the second and third centuries. The first type contains large dots, whereas the second type contains small ones. In our opinion the individual from the Southern Gate (no. 26) presents mixed features and a new one: transverse off-sets on the shoulder, which aren't described in the mentioned studies about *Emporiae* and Algeria. During the second century, the Southern Gate has received an individual of Deneauve 7B and during the third or the fourth century one of Dressel 30, with 4 lines of dots (Celis Betriu 2005: 427, 444). His last form corresponds to type DX6 of Bussière (2000: 28), author who proposes a chronology from the mid second century till the mid fifth century. Such a later dating is probably the same of the individual of the discus-derived type (nos. 33, 34, 36). The later trend of the so-called Hispanic types seems to be proved also through the quantification of their techniques (Tab. 15): group 2 (mostly orange-brown clays; a minor assemblage with light clays), absent among thin walls, is important among lamps, especially of discus-derived type, Dressel 30, volutes and discus types. Group 1 seems to be earlier, comprising volutes type, Dressel 16/Deneauve 5D and Deneauve 7B.

In the fifth century a new production area is scantily represented at the Southern Gate: the central Tunisia, *Byzacena* in the Roman times, with two individuals of *Atlante* VIII (3%), whose clay and slip are similar to those of African *Terra Sigillata* C. One of these lamps can be linked to type *Atlante* VIIIC, with concave shoulder which contains a scroll of oblique lines. Its not preserved discus should contain an Early-Christian decoration (Bonifay 2004: 364).

The third and largest typology concerns *Terra Sigillata* (Tabs. 16, 17). As we have said about thin walls, the scanty consumption of Italic *Terra Sigillata* (4.7%) reveals that at the beginning of the Early-Imperial period the economic capacity and the demographic weight were surely low in *Ammaia*. This small assemblage, essentially plain, started to form probably in the Augustan time, chronology of the single decorated type, *Consp*. Ritt. 9 (no. 40) and of type *Consp*. 19 (no. 38), that reaches the Tiberian period, as well as type *Consp*. 22 (Ettlinger *et al*. 1990: 78, 84, 90). The single Italic potter stamp belongs to *Ateius*, with rectangular impression and a most probable Augustan chronology (Oxé, Comfort and Kenrick 2000). The rest of the assemblage belongs generically to the first half of the first century AD. Here we stress the role of type *Consp*. 20 and essentially its sub-type 20.4 that starts in the mid first century, whereas type *Consp*.4.6 or 4.7 is mainly Tiberio-Claudian (Ettlinger *et al*. 1990: 58, 86). Types *Consp*. 12, 22 and mainly *Consp*. 18 must also be still produced in the second half of the first century, taking into account their impressive presence in several contexts of the third quarter of this century, like *Lepida-Celsa* (Casa de los Delfines) and *Tarraco* (Carrer del Pere Martell 38, Suburbi Sudoccidental (Beltrán-Lloris, Mostalac Carrillo and Lasheras Curruchaga 1998; Dupré i Raventos and Carreté i Nadal 1993). We must note here the presence of types *Consp*. 12 and 22, like in the Claudio-Neronian and Flavian phase of *Ammaia*'s Baths. There is just a single potter stamp at the Southern Gate: a genitive]ATEI, from the potter Ateius who has been worked in the beginning of the first century (Tab. 18).

It's through the South-Gaulish imports (La Graufesenque) (33.6%) that *Terra Sigillata*'s trade strongly increases and gains popularity in the course of the second half of the first century. The Claudian principate assumes already a strong role in this process. The South-Gaulish repertoire is vaster, although it is reduced essentially to the most common types with the predominance of Drag. 15/17-24/25 and Drag. 18-27 (nos. 42, 43, 45-47) and the presence of some earlier types, probably bought during the central decades of the century: Ritt. 1 (no. 41), Drag. 22 and Ritt. 8b (no. 44) (Passelac and Vernhet 1993). In our opinion the third quarter of the first century provides the most consistent typological data for the beginning of this commerce, taking into account the importance of types Drag. 27b and 27c and surely the lack of the decorated bowl Drag. 29, clearly less important than the later type Drag. 37 (no. 50). We must stress that this decorated-vessels trade has been always scanty at the Southern Gate, headed by Drag. 30, but the absence of preserved decorated walls prevents us from proposing precise chronologies. A single fragment contains horizontal and vertical waved lines, which are dated to the mid first century onwards (Genin and Rascalou 2004: 141). The consolidation of the South-Gaulish imports during the Neronian-Flavian periods is proved by to other types, Drag. 35 and mainly Drag. 36 (no. 49), whose quantities are very high if compared to other Iberian consumption sites. This shape is not very numerous in the Catalan shipwreck of Cala Culip IV (78-82 AD: Nieto Prieto and Puig 2001); it is well represented in the Domitian levels from the forum of *Emporion*, but scanty in its levels from the first half of the second century (Aquilué *et al*. 2005). On the contrary Drag. 36 is the second most important type between AD 100 and 125 in the stratigraphy of the South-Gaulish villa of St.-Bézard (Genty and Mauné 2006). Among the 19 decorated sherds, 1 vessel belongs to Drag. 29, 30 and 37, 2 vessels belong to Drag. 37a and 14 vessels to unclassifiable types. Only 3 sherds are related to the scroll style, typical of the splendour period (40-60 AD) and in this period we find just a single sherd with Saint Andrew's cross motif. The transition and decadence periods (60-80 and 80-120 AD) are predominant at the Southern Gate. Panels were recorded in 4 sherds (no. 52: human figure), arches were recorded in 3 sherds (one of them contains the Saint Andrew's cross) and a single vessel contains curled scrolls. We have observed a single South-Gaulish potter stamp, that belongs to Crestus from La Graufesenque, between the forties' and the end of the first century (Oswald 1931; Bémont 1976; Polak 2000; Genin 2007; Quaresma 2012: 91, 106; Hofmann *s.d.*) (see Tab. 18). Given the absence of stratigraphy for the great majority of this assemblage it is difficult to ensure the correct date for the end of the process.

The most consistent imports during the Early-Empire come from La Rioja, in the NW Iberian Peninsula (52.9%). This Hispanic area is followed by others complementary regions, like Andújar (7.8%), whereas *Augusta Emerita* (0.1%) and Granada (0.8%) are sporadic. The possible beginning of this trade, which cannot be earlier than the Flavian period, is indicated by the absence of the earlier Hispanic decoration styles, related to South-Gaulish prototypes (Mayet 1984: 81). Among the 390 individuals from La Rioja, 50 present a decoration. Twenty three fragments belong to the "circles style" (*estilo de circulos*) (nos. 60, 62, 63), 7 sherds contain vegetable motifs (no. 63) and 3 sherds have panels. The most important types (plate Drag. 15/17 and cup 27) present Hispanic profiles with simple walls and rims, which indicates a Flavian-Antonine chronology for the core of this trade, but this dating is reinforced by the significant percentages of types Drag. 35, 36, 37, 46, *Hisp*. 2, 4, and 70 (nos. 53-59). This last type is sometimes classed as *Hisp*. 7, due partly to its rarity in the markets. Its presence at the Southern Gate demonstrates also the importance of the Antonine period in this trade (Roca Roumens and Fernández García 1999: 288). On the contrary, Andújar presents earlier decoration styles in several sherds. Among a total of 14 fragments, 4 of them belong to the "circles style" and 10 sherds contain vegetable (or zoomorphic) motifs, arches and panels (nos. 66-68). Like La Rioja, Andújar presents essentially Hispanic profiles, specially regarding types Drag. 15/17 and 27. We must stress also the visible imports of Flavian-Antonine types Drag. 35, 36, 37, Hisp. 2 and 4 (nos. 62, 64, 65) (Mayet 1984: 70). The sporadic commerce with Granada has been proved by 5 bottoms of rouletted dishes and a thickened rim of 15/17 (nos. 69-70), which is present also in *Bracara Augusta* (Morais 2005: 56, no. 435)[5]. The single vessel from *Augusta Emerita* (no. 71) - whose clay is similar to the thin walls' and lamps' clay, but the slip is dark greyish red – belongs to type Drag. 15/17 with a Hispanic profile. The published study on *Augusta Emerita*'s production sector shows that the main types there were Drag.36, Hisp.10, Drag. 18/31, Drag. 35, Drag. 27 and *Hisp*.54. The surprisingly absence of Drag. 15/17 must be related to some casualty in the excavated sample and our vessel proves the production of this type in the Lusitanian capital. The potter's stamps from La Rioja are much diversified than the ones from the Italic and South-Gaulish regions.

The African imports might have started sporadically and most probably in a later stage of the second century, taking into account the absence of Flavian and Antonine types as Hayes 3, 8A or 9A. Even cup Hayes 14 and similar types as Hayes 16 and 18 are absent in this sector from *Ammaia*. On the contrary, we have recorded 2 individuals of Hayes 6 and Hayes 27 = Lamb. 9a2. Even if Hayes 6 can be dated from the beginning of the second century onwards, the fact is that the second type has been produced only from the end of that century onwards (Hayes 1972: 49; *Atlante* I: 31-32). Thus, African *Terra Sigillata* C from *Byzacena* is the first major import from Africa, but its repertoire is still narrow both typologically and technically, since there are no fragments of productions C/E, E or A/D. The assemblage comprises the most common types from the third and fourth centuries (Hayes 44, 45, 45A, 48B, 50A: nos. 72-74) and shows a clear drop from the second quarter of the fourth centuries onwards, a reflex of the short amount of forms dated from the period between AD 325 and the beginning of the fifth century (Hayes 50A/B, Hayes 53: no. 75. Hayes 1972: 72. *Atlante* I. 65). Nevertheless, there is a resume of the trade in the fourth century, which is not due to *Byzacena* but to the new production from Northern Tunisia, the African *Terra Sigillata* D. The imports of this production belong mostly to this century and we can state that it has been started in its first half, through types Hayes 58B and 59A (nos. 76-77). A second assemblage containing types Hayes 61A, 63, 67 A and 67B belongs mostly to the period of AD 350-450 (nos. 78-81). The third chronological assemblage might start between AD 400 and 420 and comprises types Hayes 91A and B, as well as forms Hayes 73 and 76 dated from the period AD 425-475, but here probably it does not go beyond the mid fifth century (Hayes 1972: 121, 125; Bonifay 2004: 177) taking into account the absence of the common type from this period, like Hayes 80/81, 61B, 87 and African *Terra Sigillata* C5 from *Byzacena*. In addition, the decorative styles recorded at the Southern Gate, A(i)-(ii) and A(ii)-(iii) point also to the first half of the fifth century (Hayes 1972: 219). It is possible to identify the form of one single decorated sherd containing the style A(ii)-(iii) and it belongs to type Hayes 67B. Motif 41 from Hayes (Hayes 1972: 237) seems to resemble the most similar and it dates from the first half of the fifth century, being acquainted in type Hayes 61B. No. 85 belongs also to the style A(ii)-(iii) and contains a grid related to motifs 67 and 69 from Hayes (1972: 241), which might be dated from 350-450 AD, being attested exactly in association to palm leaves as we observe at the Southern Gate. No. 86 presents a very well impressed motif that features a circle, a rosette and a palm leaf from style A(i)-(ii). The circle resembles motif no. 28 of Hayes's catalogue (350-450 AD) and the rosette resembles motif no. 44B, dated AD 325-375 (Hayes 1972: 236, 239).

Also the Late Hispanic *Terra Sigillata* represents an important indicator of Late Roman trades. Paz Peralta has recently proposed a starting point for this production around AD 380 considering the precedent period between AD 350-375 as a transitional one, in which we observe the crystallisation of the late morphologies and the disappearance of the classical types Drag. 44, 27, 35, Lud. Tb, Hisp. 5 and Ritt. 8[6]. On the basis of the stratigraphy from the Suburbio Norte in *Augusta Emerita*, M. Bustamante (2010: 433) has proposed that type Drag. 37t with smaller shape and style 1 (Paz 4.23-30) appeared in the fourth century, but it reaches its highest spreading in the beginning of the fifth century,

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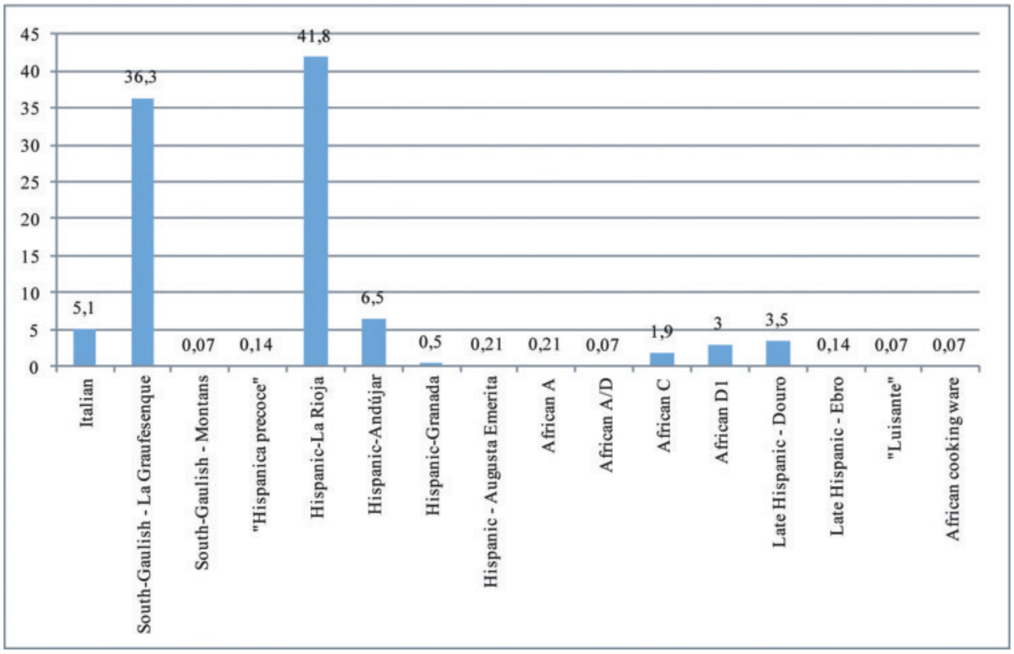
[5] Granada's clay is fine and hard-fired and visibly finer than the one from Andújar, although it contains a large quantity of inclusions too. Its slip is thick and brilliant.

[6] Nevertheless, if we observe the shapes and decorations present in some contexts earlier than AS 380, we must accept that it seems to be more proper to date this transition around Ad 350, since some dump layers from this period contains already a visible late morphology as Drag. 37t. It is the case of La Serna (AS 300-380), but above all the cases of Relea (AD 350) and Mercado de Abastos at Toledo-phase 3 (AD 350-375) (Carrobles and Rodríguez Montero 1988: 20; Nozal Calvo, Puertas Gutierrez and Rios Santos 1995: fig. 2; Juan Tovar, Pérez González and Fernández Ibañez 1995) which in our opinion attest the proposal of Juan Tovar (2000: 105) who argues that AD 350 should have been the turning point in this process. In these mentioned layers we observe already the presence of style 1 and the first Drag. 37t morphologically attached to sub-types Paz Peralta 4.18-22 and 4.15 (earlier) (Paz Peralta 2008: fig. 14).



Tab. 19 *Ammaia*. Percentages of *Terra sigillata* (1399 MNI).

whereas the smaller and rouletted Drag. 37t (Paz 4.18-22) seems to belong to the end of the fourth century and the beginning of the fifth century. Drag. 37t with complete late features as a big shape and style 2 dates mostly to the fifth century, although it might start in the late fourth century.

The Transitional Hispanic *Terra Sigillata* (third-fourth centuries) at the Southern Gate comprises a fragment of Ritt. 8A and one of Drag. 27 from Ebro's valley (nos. 100-101). Their slip is quite orange and therefore their chronologies might be set back even to the late second century taking into account the results from the stratigraphy studied in *Clunia* (Tuset i Bertrán and Buxeda i Garrigós 1995).

The most represented production for this phase is the Late Hispanic *Terra Sigillata* from Douro's valley, which tipologically begins in the period AD 350-375, as discussed above. Here we find types Lud. Tb, Hisp. 7 and Ritt. 8A (nos. 87-88). The rouletted Drag. 37t might belong to the end of the fourth century and beginning of the fifth century. Three unclassed sherds contain style 2. This commerce of Drag. 37t with style 2 should be dated to the first half of the fifth century, a phase in which we observe the end of the African *Terra Sigillata* D imports at the Southern Gate. Five sherds of Drag. 37t contain style 2, whereas style 1 pops up only twice, always on unclassed walls (nos. 94, 96-99). No. 95 presents the motif 3A/16 (small cross inside a circle) on the inner bottom (López Rodríguez 1985). No. 97 belongs to style 1 and contains a rosette inside a circle (motif 1B/6). Nos. 98 and 99 belong to style 2. No. 9 contains the motif 3A/1/1 (big circles drawn by lines and scales) and no. 99 contains a rosette drawn by a compass inside a circle related to the motif 3b/27, whose spread has been mostly recorded around the Ebro's valley, in spite of some detected points in the region of Douro (Paz Peralta 1991: 110, fig. 32). The vessel from the Southern Gate is surely arriving from the Douro valley and indicates that this motif has been produced also in that region. The other types from this Late Hispanic assemblage are not diversified, with forms Palol 4, Palol 2, Hisp. 82a and Hisp. 83b (nos. 90, 92-93)[7]. Hisp. 83b has been dated by Paz Peralta (1991: 14) from the second quarter of the fifth century onwards and this form might indicate the main trade vectors at this moment in the site.

f General view

The *Terra Sigillata* consumption (Tab. 19) is clearly more intensive during the Early-Empire, mostly represented by imports from the South-Gaulish production centres of La Graufesenque (36.3 %) and Montans (0.07 %) and the Hispanic production. The latter is dominated by La Rioja, with 41.8 %, which is followed by Andújar (6.5 %) and two other productions of Baetican origins – Granada (0.5 %) and "Hispanica precoce" (0.14 %). A third Hispanic origin is the capital of Lusitania, *Augusta Emerita*, with a sporadic 0.21 %.

This scenario points to the third quarter of the first century AD as the economic boom of *Ammaia*. In this sense,

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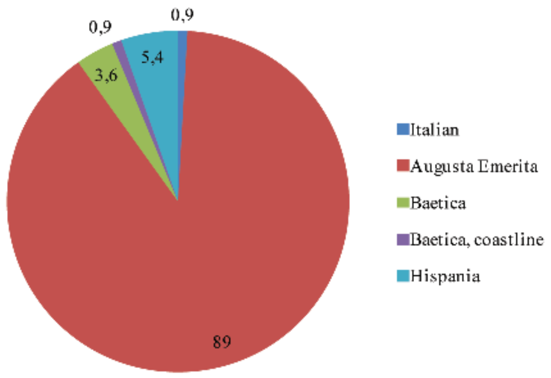
[7] Hisp. 83 has usually strong morphological connections to the African Hayes 61 (Paz Peralta 2010; Morais 2010), but feature is not significant in our case, since its profile is closer to the type Palol 5, no. 58 (see Palol and Cortes 1974: 127, fig. 35, no. 58) which has been described by the authors as a transitional shape between the types Palol 1 and Palol 5.



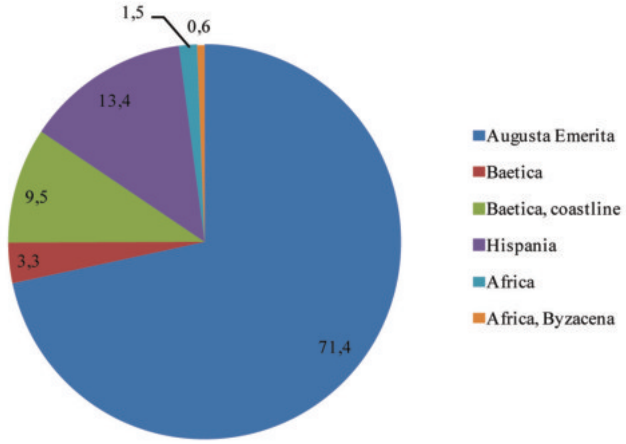
Tab. 20 *Ammaia*. Percentages of thin walls (220 MNI).

the low percentage of Italic *Terra Sigillata* (5.1 %) reinforces this interpretation, as some earlier Italic types seem to indicate (*Consp*. 4, 12, 15, 33: Ettlinger *et al*. 1990). As in some other Lusitanian towns, like *Mirobriga* (Quaresma 2012) and most importantly in the provincial capital, *Augusta Emerita*, and its region, where Italic *Terra Sigillata* is scarce (Cerrillo Martín de Caceres 1984: 61; Rodríguez Martín 2005: 188), the amount of fine wares imported in *Ammaia* is modest in the course of the first half of the first century AD, but we have to take into account factors like the obvious dramatic reduction in the preservation of the oldest layers.

As the stratigraphy of *Ammaia*'s Baths demonstrates, the import of Italic *Terra Sigillata* is already stable during the Claudio-Neronian period and becomes more dynamic during the Flavian decades. In these decades, the Hispanic trade diversifies: La Rioja (*Tarraconensis*) becomes the second main production and Andújar (*Baetica*) gains popularity, but La Graufesenque remains however in the first position.

The first decades of the second century mark the end of the South-Gaulish trade, as other Southern Lusitanian stratigraphies point to (see the case of Monte Molião-Lagos: Arruda *et al*. 2008). During the second century Hispanic production (mostly La Rioja) will be the main centres supplying *Ammaia*.

In this phase, African *Terra Sigillata* A (0.21 %) is maybe absent as the first stratigraphic records belong to the third century, when the African cooking ware is sporadically attested (0.07 %). It is probably after the mid third century that African *Terra Sigillata* C (1.9 %), from Central Tunisia, becomes chronologically the first main late production, at that time supported by another scarce production – African *Terra Sigillata* A/D (0.07 %). It is only in the course of the fourth century that imports from Northern Tunisia (3 %) register more visible percentage of African *Terra Sigillata* D1. The fourth century is probably the main period for the African trade with this last production, but also with the African C. In this late phase, a new Gaulish production reappears, although sporadically: "*Luisante*" *Terra Sigillata* (0.07 %).



Tab. 21 *Ammaia*. Percentages of lamps (326 MNI).

This late trade during the second half of the fourth century and the first decades of the fifth century is slightly dominated by the Late Hispanic production, where the Douro's valley is the main centre (3.5 %) and the Ebros' valley is clearly secondary (0.14 %)[8]. At this stage of the research, the end of the long-distance trade connections in *Ammaia* during the central decades (second quarter?) of the fifth century is expressed by the total absence of certain origins recorded in *Augusta Emerita* (DSP from Gaul, Southern Late Hispanic, Late Phocean and Late Cypriot *Terra Sigillata*) and by the scarcity of African D1 types post-420 such as Hayes 73, 76 and 91 and the absence of its decorative style A (iii) (Hayes 1972: 219, 121, 125; Bonifay 2004: 179). The late fourth century, through African D1 types Hayes 67B, 59 and style A (ii-iii), as well as through Late Hispanic trade, where Drag. 37t is largely dominant (Paz Peralta 2008: 529), was the most intensive late period of the trade performed in *Ammaia*.

The thin walls trade (Tab. 20) is functioning exclusively during the Early-Empire (Mayet 1975) and comes almost exclusively from the Iberian Peninsula. Other productions like the Italic are scarce (0.9 %), whereas *Augusta Emerita* dominates intensively this market with 89 % of the vessels. *Baetica* and its coastline supplied 3.6 and 0.9 %, statistically following what in this chapter we classified as Hispanic production, which achieves 5.4 %. Typologically, these productions centres have supplied essentially Mayet 36, 37 and 38. *Augusta Emerita* has sold another important vessel, Mayet 43, a type created by its potters (Mayet 1975: 99). Except the Baetican coastline, all these areas are already present in the Claudio-Neronian layers of the Baths, dominated largely by *Augusta Emerita*, that maintains its power in the Flavian levels, when Baetican coastline pops up (see section V.3.d). Typologically, these layers show that Mayet 43 from *Augusta Emerita* is already produced in the third quarter of the first century AD.

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[8] It is possible however that this high frequency of the Late Hispanic *Terra Sigillata* is caused by a certain taphonomical adulteration of the town consumption's assemblage recorded in these excavations. In fact, if we observe the quantification of a sample studied by D. Osland (2011: 306), African C is also moderate, but African D is largely dominant with 83%, whereas Late Hispanic production represents only 4.3%.

Once again *Augusta Emerita* heads a typological commerce in *Ammaia* (Tab. 21): the lamps from the Lusitanian capital represents 71.4% and includes mostly volutes and discus-types. As the thin walls' trade also lamps' one demonstrates that the third quarter of the first century AD is a real boom for the economic activity in *Ammaia*. It demonstrates also that this intensive economy lasts till the central decades (mid) of the second century, when new fabrics and potters appear in the provincial capital (Rodríguez Martín 2002). Coarser fabrics and the potter GES are – at this stage of research - absent from *Ammaia*. This observation could lead to assess a decrease in the ceramic trade over the first half and most probably in the second quarter of the second century. In the Early-Empire, the Baetican coastline has an important lamps' commerce, with 13.4% of the total assemblage. *Baetica* is less important with 3.3%, has Africa with a sporadic 0.6%. In the Baths' Claudio-Neronian levels, *Augusta Emerita* and the Baetican coastline share the heading of this commerce, whereas *Baetica* is sporadic. This the same picture of the next phase, from the Flavian period, in which a new production pops up – Africa.

Hispania represents 13.4% of the total lamp's assemblage, but is absent from Early-Empire stratigraphy. Nevertheless, volutes-type, discus-type, Den. 7B and Dr.16/Den. 5D attest that it is reasonable to think that this production starts already in the first century AD, or at least in the first decades of the second century with fabric 1 (grey clay). The Hispanic production becomes crucial over the second century with ending of the other Iberian productions and mainly that one from *Augusta Emerita*. Its new fabric 2 (mostly 2b: orange-brown) is now the most attested technique. From the third century onwards, Dressel 28 and 30 will be the exclusive types, since discus-derived is less important and may be dated from the second century onwards (Bussière 2000: 20 *et passim*). Unfortunately this late trade is not witnessed in our stratigraphy. In the AD 225-275 levels from the Baths Dressel 28 has been recorded and shows motifs (grape sequence on the shoulder: chapter II.6, no. 142) typical of this period (Bussière 2000: 110). This type and Dressel 30 are well represented in the fifth century stratigraphic units where at least the first type is residual. Dressel 28 presents here large or small, moulded or impressed geometric motifs repeated on the shoulder (Bussière 2000: 30 and no 3628; Rodríguez Martín 2002: pl. XX, no. 19) whose chronologies are earlier.

Lamps' trade networks have profited from the regular commerce of African *Terra Sigillata* from Northern Tunisia (African D1) in the first decades of the fifth century, which explicates the arrival of 2 individuals (0.6%) of *Atlante* VIII and VIIIC from *Byzacena*, the central area of Tunisia (Bonifay 2004: 364).

V.4 THE COARSE WARE

Vítor Silva Dias

a Introduction

The excavation of *Ammaia* has produced a large group of coarseware sherds. The present chapter presents the study of a limited number of vessels from the intramural area. The analysis is aided by reference to a small group of objects in the "Coleção António and Delmira Maçãs", a collection of finds from undocumented funerary contexts (see Introduction, p. 6). Thus, the analysis presented here constitutes only a small part of a larger study dedicated to the coarseware from *Ammaia*[1].

This study emphasises and delineates, when possible (if briefly), the context of its results within that of other Portuguese ceramic assemblages, particularly the well-studied examples of *Bracara Augusta, Conímbriga, Scallabis* and *Olisipo*. For all coarseware found to date in *Ammaia*, we have performed a quantitative, morphological and technical characterization, accompanied by a detailed analysis of the association between fabrics and shapes, as well as a consideration of the dates of contextual assemblages. Furthermore, we briefly discuss the morphological and technical characteristics of ceramic production.

The first reference to imitation Pompeian Red Ware found at São Salvador Aramenha dates to 1972 in the study conducted by Josefa Neves (Neves 1972). Therefore, our succinct analysis both expands the number of copies studied from the region of Aramenha and also provides an updated overview. The examples discussed here were found at the Baths and the Southern Gate. Beginning in 2011, the ceramics from the 1995, 1996, 1997, 2001, 2002, 2003, 2008 and 2009 seasons were examined, while those of the last excavation campaigns still need to be processed. The selection from the Southern Gate includes all sherds from the "old excavations" (those undertaken through 2013), but that from the Baths includes only the finds up to 2009, omitting the last campaign in 2011. The final analysis, which is expected to be concluded in the course of 2014, will include those excluded sherds as well as a portion of the materials found during the excavations carried out by the *Fundação Cidade de Ammaia* at the "Quinta de Deão", the building which now hosts the museum of *Ammaia*, as well as the best preserved pieces of the "Coleção António and Delmira Maçãs" stored at the National Archaeological Museum (MNA) in Lisbon, and some of the materials from the sector designated as "Estacionamento" (the "Parking" of the *Ammaia* Museum). Of this total of 1.305 fragments, we have focused our attention here on a selection which are a representative sample of the diversity of forms, fabrics, and production techniques under review.

This report begins with the description of the fabrics, followed by a quantitative analysis of the sample dataset, a characterization of the production techniques and vessel morphology, and finishes with a discussion of dating.

b Analysis of Fabrics

The ceramic analysis has enabled the identification and classification of 15 fabric groups, classified according to a letter code from A to O (N was grouped in another fabric and eliminated)[2].

Some of these groups were also subdivided into subgroups (not discussed here), whose associations will be reanalysed through archaeometric analysis, performed the Hercules Center of the University of Évora.

A

Oxidized fabric with very fine and well-sorted inclusions, porous to the touch with high compactness. There is evidence of wheel-modelling, especially around the exterior wall of the plates and on the inner wall of the base fragments. Colours include: pale red, light reddish-brown (2.5YR 6/2 - 6/3 - 6/4 - 7/4); very dark grey, light reddish-brown, pink and pinkish-white (5YR 3/1 - 6/4 – 7/4 - 8/2 - 8/3 - 8/4); pale red (5R 7/4); pale red and light pink (7.5R 6/3 - 6/4 - 7/3 - 8/3 - 8/4); light brown, pink and pinkish-white (7.5YR 6/4 - 7/3 - 8/2 - 8/3 - 8/4); pale red and pink (10R 5/2 - 6/3 - 6/4 - 6/6 - 7/3 - 7/4 - 7/6 - 8/4); and grey and pale brown (10YR 5/1 - 6/3 - 8/3). Sherds of small dimensions and thin walls predominate, suggesting a high-quality production process.

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[1] This doctoral research started in 2010, funded by an FCT fellowship (FCT – DRFH – SFRH/BD/65687/2009), under the supervision of Prof. Frank Vermeulen (2010–2011), Prof. Carlos Fabião and Prof. Filipe Themudo Barata (2012–2014; affiliation CIDEHUS – University of Évora).

[2] For the encoding of colours, we refer to the codification of Munsell 1994.

B

Oxidized fabric, with very fine and well-sorted inclusions, high compactness, porous to the touch with evidence of wheel-modelling. Sherds of slightly greater dimensions and walls slightly thicker than for type A, although still representing a high-quality production with sophisticated finishing. The smaller fragment sizes of the sherds along with evidence of decoration suggest the use of types A and B for high-status dining. Colours include: reddish-brown (2.5YR - 5/4 - 5/6); reddish-brown, light reddish-brown and pink (5YR 5/3 - 6/4 - 7/3 - 7/4 - 8/3 - 8/4); pale red (7.5R - 6/3 - 6/4); grey, brown, reddish-yellow, pinkish-white and pink (7.5YR 5/1 - 5/4 - 6/4 - 6/6 - 7/3- 7/4 - 7/6 - 8/2 - 8/3 - 8/4); grey, pale brown, light yellowish-brown and very pale brown (10YR - 5/1 - 6/3 - 6/4 - 7/3- 7/4 - 8/2 - 8/3 - 8/4); pale yellowish-pink (WHITE 7.5YR_2 9); and very pale brown (WHITE 10YR_2 8.5). Sherds of small dimensions and thin walls predominate, suggesting a high-quality production process.

C

Oxidized fabric with a bright colour, medium-sized inclusions (with larger non-plastic inclusions), porous texture, with medium–low compactness and evidence of wheel-modelling. Small sherds with slip, high porosity to the touch and thin walls (although both measures are greater than found in types A and B). The larger sherds and fewer decorated examples suggests a lesser quality of production than found in types A and B. Colours include: pink (2.5YR - 8/4); light reddish-brown , reddish-yellow, white and pink (5YR - 6/3 - 6/4 - 6/6 - 7/2 - 7/3 - 7/4 - 7/6 - 7/8 - 8/2 - 8/3); pale red (7.5R - 7/4); strong brown, light brown, pink, pinkish-white, reddish-yellow (7.5YR - 4/6 - 6/4 - 6/6 - 7/3 - 7/4 - 7/6 - 8/2 - 8/3 - 8/4 - 8/6); pale brown, light grey, very pale brown (10YR 6/3 - 7/2 - 7/3 - 7/4 - 8/1- 8/2 - 8/3 - 8/4); and very pale brown (WHITE 10YR_2 8.5). Medium-sized sherds with walls of medium thickness predominate, suggesting a more utilitarian fabric than types A and B.

D

Oxidized fabric, varying in colour between very pale brown and pale red-brown, non-porous, with medium-sized inclusions and compactness, some non-plastic inclusions and evidence of wheel-modelling. Colours include: light reddish-brown , reddish-yellow and pink (5YR - 6/4 - 6/6 - 6/8 - 7/4 - 7/6); light brown, reddish-yellow, pink (7.5YR 6/4 - 6/6 - 7/3 - 7/4 - 8/3 - 8/4); and reddish-brown, pale brown and very pale brown (10YR 5/4 - 6/3 - 6/4 - 7/3 - 7/4 - 8/3 - 8/4). Fragments of medium to large size and thickness predominate, indicating production of multi-functional/utilitarian vessels and bowls.

E

Oxidized fabric of a reddish colour, non-porous, and highly compact with frequent dark, shiny inclusions. The examples with greater wall thickness appear incompletely oxidized with a slightly grey core. Colours include: grey (2.5Y 5/1); reddish-brown, red, light reddish-brown and light red (2.5YR 5/4 - 5/6 - 6/4 - 6/6 - 6/8); light red (5R - 6/8); reddish-brown, light reddish-brown, reddish-yellow and pink (5YR 5/4 - 5/6 - 5/8 - 6/4 - 6/6 - 6/8 - 7/6 - 7/8 - 8/3 - 8/4); brown, light brown, reddish-yellow (7.5YR 5/4 - 6/4 - 6/6 - 6/8 - 7/6); and light yellowish-brown (10YR - 6/4 - 7/4). Fragments of small to medium thickness predominate, indicating manufacture of vessels with functions varying from multi-functional/utilitarian (e.g. earthenware bowls, cooking/storage pots/pans) and more decorative small jars with slip, painted decoration and rouletting.

F

Oxidized fabric, varying in colour from brown to reddish-brown, porous with medium to large inclusions and medium compactness, and evidence of wheel modelling, especially on the exterior surfaces where horizontal wheel-marks result from smoothing.

Sporadically, some examples appear incompletely oxidized with a greyish core. Colours include: red, light red (2.5YR - 5/6 - 6/8); grey, reddish-brown, reddish-yellow (5YR - 5/1 - 5/4 - 6/6); dark brown, brown, pinkish-grey, light brown, pink, reddish-yellow (7.5YR 3/4 - 5/4 - 5/2 - 6/2 - 6/3 - 6/4 - 7/3 - 7/4 - 7/6 - 8/4); and brown, pale brown, light yellowish-brown, light grey, very pale brown (10YR 5/3 - 6/3 - 6/4 - 7/2- 7/3 - 7/4 - 8/2 - 8/3). Fragments of medium size and thickness predominate, indicating manufacture of multi-functional/utilitarian vessels (jars and bowls).

G

Oxidized fabric, varying in colour from pale brown to bright red, nonporous with medium-sized inclusions and medium compactness, and evidence of wheel-modelling on both internal and external walls. Horizontal wheel-marks result primarily from internal smoothing, especially on the containers (jars and jugs). Colours include: reddish-brown, red (2.5YR - 5/4 - 5/8); reddish-brown, light reddish-brown, reddish-yellow and pink (5YR - 5/3 - 5/4 - 5/6 - 5/8 - 6/4 - 6/6 - 6/8 - 7/3 - 7/4 - 7/6); pale red (7.5R - 6/4); brown, strong brown, light brown, pink, reddish-yellow (7.5YR - 5/4 - 5/6 - 6/4 - 6/6 - 7/4 - 7/6- 8/3); and greyish-brown, pale brown, very pale brown (10YR - 5/2 - 6/3 - 7/3 - 7/4 - 8/3 - 8/4). Fragments of small to medium size and thickness predominate, indicating manufacture of multi-functional/utilitarian vessels (e.g. jugs, jars and earthenware bowls).

H1

Reduced fabric, varying in colour from reddish-grey to very dark grey, non-porous with medium-fine compactness and evidence of wheel-modelling. Colours include: dark reddish-grey, pale red, reddish-grey, pale red, light reddish-brown (2.5Y 3/1 - 4/1 - 4/2 - 5/1 - 5/2 - 6/1 - 6/2 - 7/1 - 7/3 – 8/1); reddish-brown, reddish-grey and pale red (2.5YR 5/4 - 6/1 - 6/2); very dark grey, dark grey, grey, olive grey, light olive grey, light grey (5Y 3/1 - 4/1 - 5/1- 5/2 - 6/1- 6/2 - 7/1); grey, reddish-brown, reddish-yellow and pink (5YR 5/1-5/3 - 5/4 - 6/1- 6/6 -7/4); very dark grey, dark grey, brown, light brown and pink (7.5YR 3/1 - 4/1 - 4/3 - 5/1 - 5/2 - 5/3 - 5/4 - 6/1 - 6/4 - 7/1 - 8/4); dark grey, dark greyish-brown, grey, greyish-brown, brown, yellowish-brown, light brownish-grey, pale brown, light yellowish-brown, very pale brown (10YR 4/1 - 4/2 - 5/1 - 5/2 - 5/3 - 5/4 - 6/1 - 6/2 – 6/3 - 6/4 - 7/4); black (GLEY 1 2.5/N; GLEY 1 4/N; GLEY 1 5/N; GLEY 1 6/N; GLEY 1 N 6); very dark grey (GLEY 1 3/N); dark greenish-grey (GLEY 1 4/10Y); greenish-grey (GLEY 1 5/10GY; GLEY 1 5/10Y; GLEY 1 6/10GY; GLEY 1 6/10Y); light grey (GLEY 1 7/10GY), light greenish-grey (GLEY 1 8/10Y). Fragments of small to medium size and thickness predominate, indicating manufacture of vessels for kitchen use, such as plates, jugs and jars.

H2

Reduced fabric, varying in colour from reddish-grey to dark grey, non-porous with medium grains and evidence of wheel-modelling. Horizontal wheel-marks result from smoothing, especially on the interiors of wall and base sherds, on rim sherds, and on fragments of dishes. Walls with blackened surfaces may indicate sooting or charring. Some examples are oxidized on their internal surfaces, indicating uneven firing. Colours include: reddish-grey (2.5Y - 6/1); reddish-grey (2.5YR - 6/1); dark grey, grey, olive grey, soft yellow (5Y - 4/1- 5/1- 5/2 - 7/1); reddish-brown and pink (5YR 5/3 - 5/4 - 7/3); very dark grey, dark grey, brown (7.5YR 3/1- 4/1- 5/2); greyish-brown, brown, yellowish-brown, light brownish-grey, pale brown (10YR 5/2 - 5/3 - 5/4 - 6/2 – 6/3); very dark grey (GLEY 1 3/N); greenish grey (GLEY 1 5/10Y, GLEY 1 6/10Y). Fragments of medium size and thickness predominate. The coarse finish characteristic of indigenous production indicates production of utilitarian vessels, primarily small to medium-sized kitchen vessels.

I

Oxidized fabric, non-porous with small inclusions, high compactness with evidence of wheel-modelling. Colours include: weak red, reddish-brown, red, light reddish-brown, light red (2.5YR - 4/2 - 4/4 - 4/6 - 5/2 - 5/3 - 5/4 - 5/6 - 5/8 - 6/1 - 6/3 - 6/4 - 6/6 - 6/8 - 7/4 - 7/6 - 7/8); reddish-brown, light reddish-brown, reddish-yellow and pink (5YR 5/4 - 5/6 - 5/8 - 6/4 - 6/6 - 7/4 - 7/8); light red (7.5R 6/6); light brown (7.5YR - 6/4); and pale brown (10YR - 6/3). Fragments of medium size and thickness predominate (although sherds in this fabric are primarily base fragments), indicating production of vessels such as jars.

J

Oxidized fabric, white in colour distinguishing it from all others, porous and with fine inclusions, high compactness and evidence of wheel-modelling. Identified as imported vessels from Hispanic *Baetica*. Colours include: very pale brown (WHITE 10YR_2 8; WHITE 10YR_/2 8.5); pale orange-yellow (WHITE 10YR_2 9); white (WHITE 2.5YR_/1 8.5); white (WHITE 2.5YR_1 9); and very pale brown (WHITE 2.5YR_2 8.5). Fragments of medium size predominate, the fabric and the medium thickness indicating manufacture of vessels for non-cooking use, such as *mortaria* and jugs/jars.

K

Oxidized fabric with fine inclusions, slightly porous, low compactness and presenting signs of wheel-modelling. Light orange slip of high quality distinguishes it from other fabrics. Colours include: very pale brown (WHITE 10YR_2 8; WHITE 10YR_2 8.5); and white (WHITE 2.5YR_1 9). Fragments of medium size and thickness predominate, suggesting influence from the town of *Augusta Emerita*.

L

Oxidized fabric with large inclusions, porous, with high compactness. Colours includ: reddish-grey, reddish-brown (2.5YR - 5/1 - 5/3 - 5/6); reddish-brown (5YR - 5/4); pale red (7.5R - 5/3); brown, light brown (7.5YR - 5/4 - 6/3); and light greenish-grey (GLEY 1 7/10Y). Sherds are of greater dimensions than those of other fabrics (A to O), indicating the likely production of large storage containers and bowls.

M

Reduced fabric of dark reddish-grey and light reddish-brown colour, with medium inclusions (larger and more frequent non-plastic elements than other fabrics), non-porous, with medium compactness and evidence of wheel-modelling. Fewer examples with decoration than fabrics A and B. Colours include: dark reddish-grey, pale red, reddish-brown (2.5YR 4/1 - 5/2 - 5/3 -5/4); reddish-brown, light reddish-brown (5YR - 5/3 - 5/4 - 6/4); and weak red, pale red, light pink (7.5R 4/2 - 5/4 - 6/4 -8/3). Fragments of medium size and medium thickness predominate, indicating manufacture of kitchenware, perhaps pans and saucepans.

O

Oxidized fabric, varying in colour from dark grey to light yellowish-brown, with small to medium inclusions, porous texture, medium to low compactness and showing evidence of wheel modelling. Some examples bear incised decoration. Colours include: reddish-brown, red, light reddish-brown, light red (2.5YR - 5/4 - 5/6 - 6/4 - 6/6- 6/8); very dark grey, reddish-brown, reddish-brown, light reddish-brown, reddish-yellow and pink (5YR - 3/1 - 4/3 - 4/4 - 5/3-

5/4 - 5/6 - 6/4 - 6/6- 7/4); light red (7.5R - 6/6); brown, light brown, reddish-yellow (7.5YR - 4/3 - 5/4 - 6/3 - 6/4 - 6/6); and greenish-brown, brown, yellowish-brown, pale brown, light yellowish-brown (10YR 5/2 - 5/3 - 5/4 - 6/3 - 6/4). Fragments of medium size and medium thickness predominate and closed forms appear to be smaller vessels overall than open forms in this fabric, indicating the use of this fabric in the production of small bowls and utilitarian vessels.

c The Southern Gate area

All coarse wares from the Southern Gate excavation area have been counted and weighed. In this assemblage, there are 26,372 sherds in total, of which 2,713 are diagnostic fragments and 23,659 are non-diagnostic. The diagnostic sherds have been grouped by fragment type (Fig. 247): 'bases' (1,196 sherds), 'rims' (1,159 sherds), 'handles' (336 sherds) and 'decorated sherds' (19 sherds).

The total weight of all sherds was 267.473 kg, of which 67.243 kg were diagnostic and 200.215 kg were non-diagnostic.

The ceramics collected at the Southern Gate were excavated within 'squares' (see *supra*, chapter III.1). Two squares located on the intramural side of the West Tower contained the greatest quantity of ceramics, as well as the most diagnostic sherds.

This first phase of fragment selection and quantification has also included the analysis, register and study of handle fragments. There were 261 handle fragments, of which 113 had longitudinal depressions when viewed in section, 62 had longitudinal fluting in section, and 60 were oval in section. Less common sections included flat (16 fragments), round (6 fragments) and semi-detached (4 fragments). Figure 248 shows the quantification of the handle types.

d The Baths area

From the group of 20,925 sherds (weighing 207.877 kg) found in the Baths area, 16,741 fragments were non-diagnostic (143.507 kg), and 4,195 fragments (64,370 kg) were diagnostic.

Similarly to what was found at the Southern Gate, a prevalence of ceramic fragments of 'bases' and 'rims' was also found, although interestingly, at the areas concerning the public bathhouse, the presence of rim fragments (1,590) prevailed, at the expense of the 'bottoms' (1,113) (Fig. 249). Likewise, in this sector of the city, it was also possible to find "handle fragments" and fragments with "decorations", showing not only that the containers for liquids prevailed, as expected from the archaeological record point of view, but also that the ceramic materials were subjected to a more careful surface treatment.

Given the importance that we decided to assign to the sections of the handle fragments, here we can stress that a total of 599 handle fragments were found. Remarkably, at this sector of the roman town, the examples of handle pieces with "detached sections" (381 fr.) and sections with "gooves" (160 fr.) dominate, whereas, examples of pieces with longitudinal depression are missing (Fig. 250).

What stands out most of all, from the group of handle fragments collected at the "Baths, is the preference for the "semi-detached" section, and the consistency of the numerical examples of the section with gooves, both found at the Southern Gate and at the Baths. On the other hand, the residual values counted for handle fragments with "round" and flat sections are also matching the results obtained at the Southern Gate. Nevertheless, within the context of the Baths, the handle fragments with oval sections seem to be of minor relevance, when compared to the findings at the Southern Gate. Hence, the section that presents the third major representation at the Southern Gate, has only a minor presence at the Baths area.

The stratigraphic units register the following counting: SU 86: 724 fr., SU 152: 502 fr., SU 69: 454 fr., SU 68: 322 fr., SU 112: 146 fr., SU 110: 118 fr., SU 130: 86 fr., and these

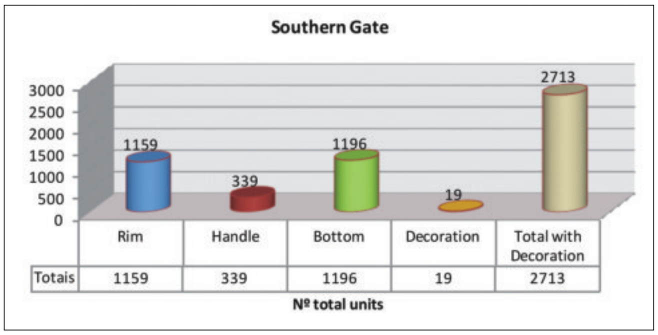

Fig. 247 Quantitative and morphologic analysis of the ceramic fragments collected at the Southern Gate of *Ammaia*.

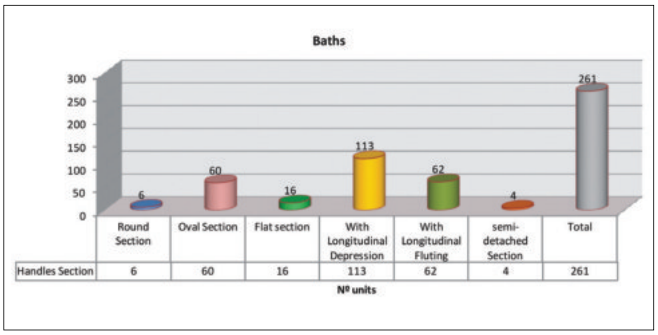

Fig. 248 Form distribution of the sections of the handle fragments found at the Southern Gate of *Ammaia*.

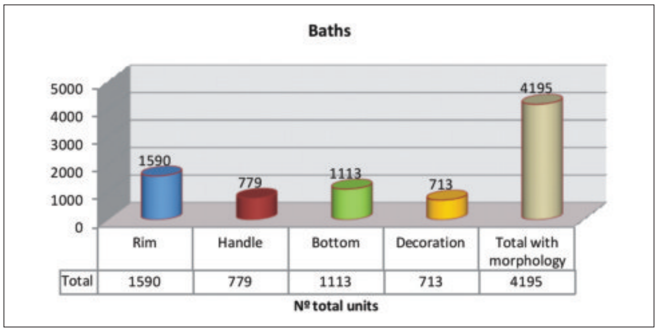

Fig. 249 Quantitative and morphologic analysis of the ceramic fragments collected from the Baths of *Ammaia*.

layers are those with the highest rate of morphological information. In contrast, the SU 98, with 63 fr., SU 155, with 64 fr., SU 151, with 40 fr., SU 63, with 34 fr., SU 147, with 31 fr., SU 90, with 19 fr., SU 89, with 14 fr., SU 1, with 12 fr., SU 174, with 5 fr., SU 116, with 4 fr., and SU 149, with 3 fr., are the ones with less data available for processing.

e The coarse ware of *Ammaia*. Some considerations

The poor representation and stratigraphic uncertainty of the materials extracted from "Quinta de Deão" and "Estacionamento" and of the materials that compose the "António and Delmira Maçãs Collection" (Fig. 251), inhibits the construction of a more substantial and representative analysis of the data. Nevertheless, a brief analysis of overall groups enables to conclude that:

1. From a morphologic point of view, there is a numeric superiority of "bases" and rim fragments, followed by the handle fragments;
2. The relationship between the mass of the fragments, with and without shape, is proportional to the number of fragments that compose each group;
3. The fragments of coarse ware that provide morphologic information are present in a percentage of 10.28% and of 20,04%, of the total of fragments extracted from the Southern Gate and Baths areas respectively;
4. The handle fragments collected present a preference for sections with longitudinal depressions and with "semi-detached" sections at the Southern Gate and at the Baths, respectively;
5. The squares with greater representativeness and information are those corresponding to the structures of the towers and intramural surroundings of the Southern Gate;
6. The stratigraphic units with greater representation at the Baths sector are the following: SU 86 (724 fr.), SU 152 (502 fr.), SU 69 (454 fr.), SU 68 (322 fr.), SU 112 (146 fr.), SU 110 (118 fr.), SU 130 (86 fr.).

Nineteen vessel forms have been identified in the coarse ware from the Southern Gate and Baths excavations: plates, deep plates, bowls, *mortaria*, alguidar bowls, terrines, saucepans, pans, pans/pots, pots, cups, jars, jugs, pitchers, bottles, large and small *ollae* and lids. The fifteen fabrics identified have been described above.

The fine ware chronology was created through comparison with those from other sites, establishing that the assemblage dates to between the Claudian period and the late fifth century, with a greater presence of sherds dated to the early empire. The Pompeiian Red Ware imitations from the Southern Gate excavation are early imperial through fourth century in date.

The coarse ware from *Ammaia* is dominated by plate forms strongly imitating Italic forms, which allows them to be closely dated even though the stratigraphy at the Southern Gate and the Baths did not allow for great chronological control. Once the material will be fully processed, comparison with the assemblages from other sites in *Lusitania* and the *Hispaniae* will allow for drawing out other chronological relationships. For the moment, we can just stress that the fragments brought back to the forms Oberaden 21 (= form 6 in Aguarod 1991) and Oberaden 22 (= form 4 Aguarod 1991) are dated to the flavio-Trajanic period, or to the Claudio-Augustan period (Alarção 1976: 53).

The imitation Pompeian Red Ware at *Lugo* dates to between the second half of the first century and the beginning of the second century AD, while at *Bracara Augusta*, the chronology could not be determined because of poor stratigraphic information; the fabric is, however, likely to have been in production across the Empire into the fourth century (Delgado 1993–94: 116, 120). At *Conimbriga*, there appears to be a distinction between the 'true', earlier imitation Pompeian Red Ware, with internal slip, which dates to the early imperial period, and the later, less-exacting examples, which continued to be made until the fourth century (De Man 2006: 113-114). At *Tongobriga*, there are examples of imitation Pompeian Red Ware lacking internal slip, while the Aguardo Otal pieces exhibit great diversity of fabrics (Arruda and Viegas 2002: 232).

Despite the frequent absence of slip on some of the imitation Pompeian Red Ware (here referred to as 'morphological imitations') from *Ammaia*, further investigation is needed to secure the chronology of this type. Nonetheless, those sherds lacking internal slip can probably be dated to after the first century AD by correlation with the chronologies developed at *Tonobriga* and *Conimbriga*. Uncertainty in this hypothesis is demonstrated by the use of early imperial forms with this fabric type, lacking internal slip, among the examples in the Maçãs collection (Neves 1972) from the necropolis of the town. Further study is needed to present a secure chronology of the forms and fabrics from *Ammaia*.

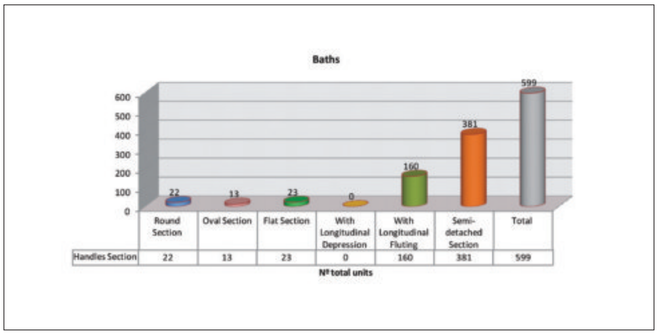

Fig. 250 Form distribution of the sections of the handle fragments found at the Baths of *Ammaia*.

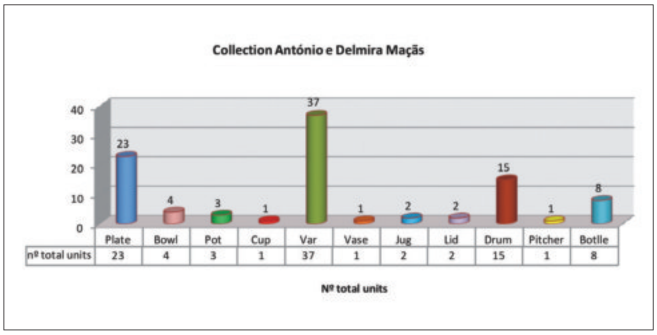

Fig. 251 Form distribution of the fragments that compose the "António and Delmira Maçãs Collection", National Museum of Archaeology, Lisbon.

f Interpretation of the results

The imitation Pompeian Red Ware from Portugal forms a relatively small part of the overall ceramic data. The current study shows the *Ammaia* assemblage to be comparable to urban centres of varying sizes and statuses: *Scallabis* (89 fr.; Arruda and Viegas 2002: 222), *Olisippo* (62 fr.; Fernandes and Filipe: 2007: 229), *Bracara Augusta* (8 fr.; Delgado 1993–94: 115–120), *Conímbriga*: (31 fr.; Alarcão 1976: 55-56), *Aemmium* (4 fr.; Carvalho 1998: 78–79), and *Salacia* (3 + 5 fr.; Sepúlveda *et al*. 2003: 385; 2008, 288–289; Sousa *et. al.* 2008: 153–154). The common ware produced for consumption at *Ammaia* was modelled on Italian forms; the examples with which the potters supplying *Ammaia* were familiar were those found across the Italian peninsula. Local patterns of production and consumption were closely connected to trade contacts and communication with the centre of the Empire.

Vessel form Aguarod 6 is dominant in the *Ammaia* assemblage, while forms 3 and 5, although also present, are less well represented, suggesting that while the producers and consumers in *Ammaia* were familiar with other Italian forms, they preferred the Aguarod 6. This pattern is similar to that found in the Roman towns of *Bracara Augusta*, *Conimbriga*, *Olisipo* and *Salacia*.

In *Ammaia* the Pompeian Red Ware has to be considered an imitation, and the assemblage seems to prove not to have been used so often for cooking, as it is frequent in inland towns, where vessels with no evidence of cooking use are the most frequent find, as suggested by the lack of scorching or sooting on the external walls: e.g. *Bracara Augusta* (Delgado 1991: 117) and *Conimbriga* (Alarcão 1976: 54). On the contrary, in coastal towns like *Scallabis* (Arruda and Viegas 2002: 222), *Olisipo* (Fernandes and Filipe 2007: 237), and *Salacia* (Sepúlveda *et al.* 2008: 288–289) the original Pompeian Red Ware vessels seem to be used for cooking. Use-wear analysis on imitation Pompeian Red Ware in *Lusitania* has shown that scorching and sooting are common (Alarcão 1976: 54). One base fragment from *Ammaia* bears incision on the interior, suggesting some kind of stirring action; it is similar to examples from *Bracara Augusta* and *Olisippo,* and supports the idea that imitation Pompeiian Red Ware was used for food preparation.

The earlier imitation Pompeiian Red Ware from the Southern Gate excavation dates to the Early Empire, probably after the Augustan/Tiberian period. Later in the first century AD, examples began to be produced with the application of watered engobe. lacking internal slip (although this type did not replace the use of internal slip). There are too few examples and too little stratigraphic information to form a clear sense of the chronology or differences in consumption patterns, however.

To date, little to no imported Italian Pompeiian Red Ware has been found at the inland sites of *Ammaia*, *Bracara Augusta*, or *Coninbriga*, whereas the type has been found in the port cities of *Scallabis*, *Olisippo*, and *Salacia*, suggesting that Pompeiian Red Ware was imported to the ports in Portugal, but not distributed inland where potters produced imitations instead.

The *mortaria* of *Ammaia* can also be used for dating purposes category. In the excavation of the Baths, the stratigraphic unit SU 154 contained two fragments, and SUs 170 and 147 each contained one fragment. At the Southern Gate, the stratigraphy was unclear. Two of the *mortaria* sherds could be dated to the Claudian–Neronian periods (*c.* AD 41–68) and one sherd to the Flavian–Antonine periods (*c.* AD 69–192). The 20 *mortaria* sherds in the *Ammaia* assemblage present a convincing similarity to Italian forms: *Emporiae* 36.2 (Aguarod 1991: 124–128), Dramont 1 (Aguarod 1991: 129–140) and Dramont 2 (Aguarod 1991: 140–185).

This preference for Italian ceramic forms seems to have its origins in *Baetica*, which has been noted previously in relation to the form IV-C-1 from São Cucufate (Pinto 2003: IV, 172) as well as in form 1 of *Scallabis* (Arruda and Viegas 2004: 343), both of which were produced in *Baetica* and modeled on the Italian form Dramont 1. Likewise, in Monte Molião, local ceramic production was found to imitate Baetican models from the earliest period (Arruda *et al*. 2010: 10-11). The influence of *Baetica* is clear in a simple quantitative analysis, where the fragments imported from *Baetica* represent 30 % of the *mortaria* identified. The dates of the *Ammaia mortaria* (*c*. AD 41–192) correspond to a period of economic prosperity at *Ammaia*. Although a small sample, that 30 % (6 of 20 sherds) of the *mortaria* from *Ammaia* are Baetican is significant when one considers that among all of the common ware from *Ammaia*, only 14 fragments imported from *Baetica* have been identified so far (namely, 6 sherds *mortaria*, 2 sherds of *ollae*, 3 sherds of little *ollae* and 3 sherds of jugs/jars). Additionally, it is also interesting to note that the brightly coloured fabrics, with colors similar to those from *Baetica*, account for approximately 40 % of the common ware assemblage.

V.5 THE AMPHORAE

Caterina P. Venditti

a Introduction

The amphorae set housed in the Museu da Cidade de *Ammaia*'s storerooms is on the whole rather remarkable, quite large, and heterogeneous both in terms of forms and fabrics and of original contexts. The data here presented were obtained from a survey made on a selection, amounting to little more than 600 samples found in the excavations of Forum, Baths and Southern Gate, as well as a large group of pieces whose coordinates of discovery context are unknown[1].

The vast majority of this collection is composed by fragments often in real poor conditions of preservation, and therefore not always easily ascribable to specific typologies. Among these, only 129 best preserved potsherds were useful for a diagnostic approach: considering the enormous potential of the amphorae in order to rebuild the economic and social aspects, and focusing on their typology and chronology we are able now to reconstruct a rather varied and plausible scenario of the imports of goods and the local consumptions in a wide chronological range that covers about seven centuries.

b Quantification

Keeping out the walls, every single rim, handle, base and shoulder was recorded in a database; later, counting the diagnostic fragments, the minimum number of individuals (NMI) per type was calculated according, as far as possible, to the Protocole Beauvray 1998 (Arcelin and Tuffreau-Libre 1998: see especially the contributions by Raux 1998 and Laubenheimer 1998). In general terms, the evaluation added up only each single rim pertaining to different forms: however, handles and bases were also recorded in exceptional cases, when they represented a not otherwise known form[2] (Tabs. 1-4).

Looking at these tables, we cannot ignore the significant lack of homogeneity of the set under the quantitative perspective and proportions, certainly due to the diverse collection methodologies and selection applied as well as to the obvious change according to the original function of each urban zone and to the period. On the other hand, documented types tend to recur in the contexts, with one remarkable diversification in the area of the Southern Gate, which has a larger number of different forms, covering a wider period (Figs. 252, 255).

In principle, the highly fragmentary status of the amphorae, as well as the rare chance to link them to the layers preclude (or make it difficult and risky) their use as timeline markers, except in combination with other dating materials[3]. Nevertheless, although the existing data are quite discontinuous, fragmentary, and in some respects incomplete, it's possible to outline a provisional estimated model of distribution in the ancient town of *Ammaia*.

A cross-check between data-types and relative chronologies (Figs. 253-255 shows us a layout that in a macro-scale substantially confirms the already acquired information about the foundation and the abandon phases (see Introduction: 5-7), but without any possibility for each sector to narrow the necessarily very wide time range.

As "index fossils", the amphorae testify in favour of the liveliness and the vitality of *Ammaia* at least from the end of the first century BC to the sixth century AD. The more detailed and varied scenario is the Southern Gate's one: from this area come the most ancient form[4] and the most recent one[5], in both cases unfortunately represented by single specimens found in such fragmentary conditions that impede any clarification about the relative chronology.

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[1] This group of materials has been subjected to a monographic research carried out in 2009-2010, in the framework of a post-doc grant financed by FCT, under the supervision of Prof. C. Corsi (UEvora) and Prof. A. Guerra (ULisboa), and with the scientific support of Prof. Fabiao (ULisboa). I wish to express my most sincere gratitude to all them, for their precious advices, lessons and assistance.

[2] The suitability of the computing system and the final results depend on a number of variables often independent of the effectiveness of computation itself (Carreras Monfort 2006: 27), and for this reason the numbers must absolutely be considered as provisional, with the necessary as obvious advise to be very careful in the use of the extracted data.

[3] Stratigraphic information are available only for the recent excavations of the Baths, whereas amphorae coming from Forum and Southern Gate excavations frequently have just approximate context coordinates. Furthermore a large amount of shreds (*c.* 40%) - especially those recovered in the investigations undertaken in 1997 - unfortunately cannot be referred neither to specific squares or sectors: collected during the surveys or the surface cleaning operations, they are so unusable in the task of rebuilding the contexts, although sometimes they are very significant especially as regards the attested forms.

[4] The thickened rim of Richborough 527 form (AMM1996B2433.4), from square 2433.

[5] The ribbon-shaped curved handle of a probable LRA 3 form (AMM1995B2434.46), from square 2434.

BATHS	**Type**	**rim**	**handle**	**base**	**shoulder**	**MNI**
	Haltern 70 (Lusitanian)	1	/	/	/	1
	Dressel 14	1	/	/	/	1
	Lusitana 3	6	1	/	/	7
	Almagro 51 c	3	3	/	/	6
	Almagro 51 A & B	1	/	/	/	1
	Lusitana 9	1	/	/	/	1
	Indefinable	1	7	1	2	11
	TOT.	**14**	**11**	**1**	**2**	**28**

FORUM	**Type**	**rim**	**handle**	**base**	**shoulder**	**MNI**
	Dressel 14	/	/	1	/	1
	Almagro 51 c	3	/	2	/	3
	Almagro 50	1	/	/	/	1
	Dressel 2-4	/	1	/	/	1
	Dressel 23	1	/	/	/	1
	Indefinable	/	2	/	/	2
	TOT.	**5**	**3**	**3**	**/**	**9**

SOUTHERN GATE	**Type**	**rim**	**handle**	**base**	**shoulder**	**MNI**
	Dressel 2-4	/	2	/	/	2
	Beltran IIA	1	/	/	/	1
	Gauloise 4	/	3	/	/	2
	Richborough 527	1	/	/	/	1
	Haltern 70	1	/	/	/	1
	Dressel 14	3	1	/	/	3
	Almagro 51 c	10	6	9	/	10
	Almagro 50	4	2	/	/	4
	Keay XVI	1	/	/	/	1
	Lusitana 9	4	/	/	/	4
	LRA 3	/	1	/	/	1
	Indefinable	/	15	/	1	15
	TOT.	**25**	**30**	**9**	**1**	**45**

UNKNOWN CONTEXT	**Type**	**rim**	**handle**	**base**	**shoulder**	**MNI**
	Beltran IIB	2	/	/	/	2
	Dressel 2-4	/	1	/	/	1
	Dressel 14	1	/	1	/	2
	Dressel 20	/	1	/	/	1
	Dressel 23	1	2	/	/	2
	Gauloise 4	/	/	1	/	1
	Almagro 51 A & B	2	/	/	/	2
	Almagro 51 c	15	6	6	/	15
	Almagro 50	4	/	/	/	4
	Lusitana 3	1	/	/	/	1
	Lusitana 9	3	/	/	/	3
	Keay XVI	1	/	/	/	1
	Indefinable	1	18	1	1	17
	TOT.	**37**	**30**	**10**	**2**	**52**

Tabs. 1-4 NMI of amphorae per context.

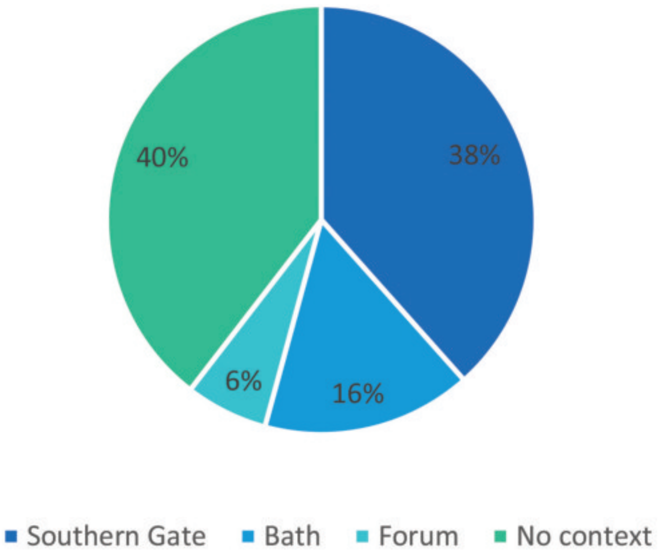

Fig. 252 Distribution of amphorae per context.

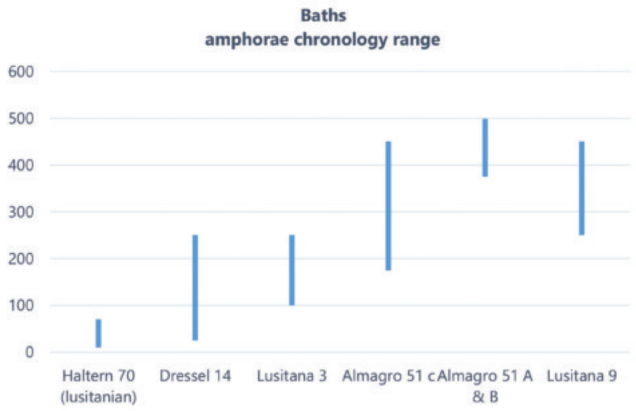

Fig. 254 The chronological range of the amphorae from the Baths.

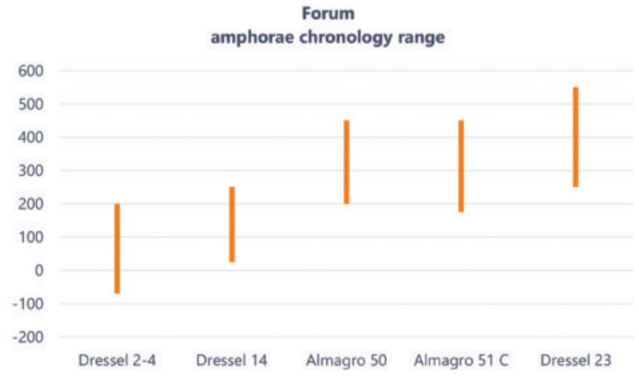

Fig. 253 The chronological range of the amphorae from the Forum.

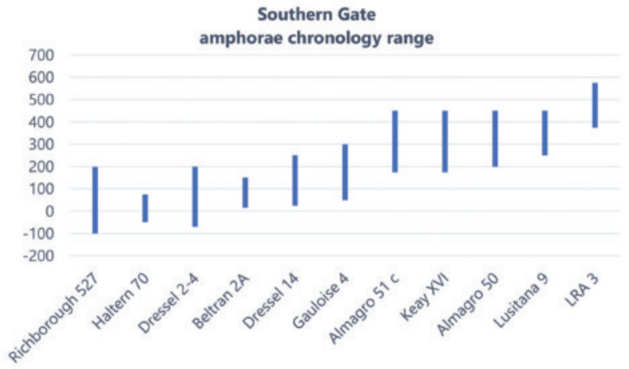

Fig. 255 The chronological range of the amphorae from the Southern Gate.

Lusitanian production and imports

The geographical position and the role as trade junction of *Ammaia* are the main keys to explain the strong dynamism of the town as the amphorae finds suggest in particular in terms of exchange of goods to and from *Ammaia*. Placed S of the Tagus River, *Ammaia* was located at the centre of a vast region crossed by a complex road network, consisting of several main and regional roads that ensured the connections to the most important towns in the central area of the province, and to the Western and Southern Atlantic coast[6].

As first and obvious outcome, we highlight a multilateral solid trade both inside and outside the *Lusitania* boundaries. Considering the whole set from a quantitative point of view, and the results of systematic investigation on forms and fabrics, it is not surprising that Lusitanian amphorae are numerically preponderant (Fig. 256). Used normally in a regional trade system to carry wine and fish, they are the most representative group, with more than half of the entire assemblage, and date from the first century AD to the middle of the fifth.

Regarding the fabrics, the research allowed us to isolate the distinctive productions[7] very likely in close relation with the numerous workshops placed along the valleys of the

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[6] On the eastern side, the connection with *Augusta Emerita* through the road that leaves from the Southern Gate, was the fast track to reach the Baetican Coast, as well as the Algarve region; on the opposite side, the east-west routes system between *Augusta Emerita* and *Olisipo* (Lisboa) reached the Southern territory of *Ammaia* and its hinterland, simplifying the contacts with the town and those placed along the Tejo valley: Vermeulen, Corsi and Meyer 2012: 158-160, with references.

[7] The visual characteristics show a generally hard, coarse fabric, with variable size inclusions of quartz, feldspar, mica and small black or ferruginous (iron oxides) nodules; the major inclusions often are rounded, the smaller one angular, or relatively sub-angular. The clay colour spectrum includes the darker and paler tones of reddish, orange, dark-red and brown.

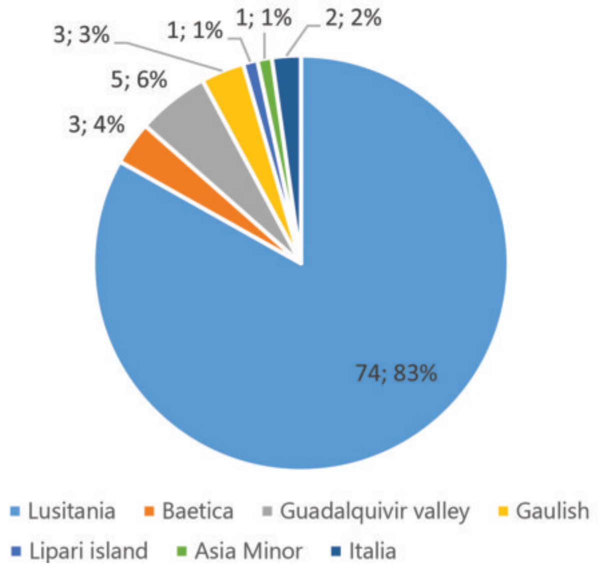

Fig. 256 Quantification of imported and Lusitanian amphorae from *Ammaia*.

Tagus and Sado rivers[8]: nevertheless a mere overview on hand specimens gives no chance to distinguish the exact origin and the production centres, because the differences between those fabrics are very subtle and they maintain the same basic matrix and petrographic features[9].

In what would seem a homogeneous scenario, stands out even more the presence of the base AMM1997.40, an earlier variant of Almagro 51 c form, ascribable to the Southern Lusitanian production[10]. At the present state of the research, this sample could represent the only one - even still hypothetical - proof of a regional import of fish based products from the Algarve region, but in absence of other confirmations, it will be more appropriate to consider this evidence with caution.

About fifteen dubious potsherds, highly similar in shape to the Lusitanian amphorae, but very unusual in their visual characteristics, were selected as samples for mineral-petrographic analysis[11], although they were more likely pertaining to local productions.

Overall, the feeling is that imports are rare and largely restricted to few areas: the minority and uneven group of these containers came from Western and Eastern areas of the ancient Mediterranean (Baetican coast, Guadalquivir valley, Italia, South Gaul, Asia Minor, Lipari Island), which influence on the local economy and consumption patterns, as in a very small proportion, has been wielded at least from the first century BC up to the late antiquity.

c The contents

Wine amphorae (Figs. 257-258)

At the present state of the knowledge the most ancient exemplar from *Ammaia* should be an everted collar rim of Haltern 70 found during the old Baths excavations (AMM2002B1310.3), and ascribable to a Lusitanian production because of his fabric (Bustamante Álvarez and Heras Mora 2013b)[12]. The morphology appears quite similar to the Baetican types, with an everted collar rim, oval handles with a vertical groove, cylindrical body and a solid conical spike, widely produced in the medium and lower Guadalquivir valley, in the Marismas and the Huelva and coastal region (Carreras Monfort 2005a; Id. 2013, with bibliography; Carreras Monfort and Berni Millet 2012, with bibliography).

There is also a well-known Lusitanian production - anywhere near Merida - of this form used in trading *defrutum* or olives in *defructum* or *muria*[13] (Bustamante Álvarez and Cordero Ruíz 2013; Bustamante Álvarez and Heras Mora 2013a), but the high level of standardization of the production does not allow to narrow down the chronological range, that stands from the first quarter of the first century AD up to the pre-Flavian era.

Among the wine amphorae the most frequent type observed in *Ammaia* collection belongs to the Lusitana 3 form, a small amphora inspired by Gallic ring-foot series, with thickened rim, short handles with one or more grooves, ovoid or elliptical body and generally a ring-foot, here not attested (Quaresma and Raposo 2014, with references).

Unfortunately, our specimens stand mostly in a very fragmentary state of preservation: the macroscopic observations, carried out with a hand lens 15x, showed a generally hard-fired, rough/harsh gritty reddish coarse fabric, containing frequent ill-sorted inclusions, grains of quartz, long strands of mica and a scatter of discrete grains of feldspar.

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[8] A prolific scientific activity contends with this issue for several years and has already produced a very intensive bibliography: among the others, see as basics Diogo and Faria 1990; Duarte 1990; Cabral, Gouveia and Morgado 1993-1994; Raposo, Sabrosa and Duarte 1995; Mayet, Schmitt and Silva 1996; Mayet and Silva 1998; Fabião 2004; Raposo *et al.* 2005; Mayet and Silva 2009; Dias *et al.* 2010; Dias *et al.* 2012, with references; Raposo 2012, with references.

[9] A perfect synthesis about this fabric's features in Almeida and Raposo 2014a with references, in the online database *"Amphorae ex Hispania"*.

[10] We note as distinctive features of its fabric numerous red rounded (oxide grains) and white (limestone) nodules in the clay. For a description of the main characteristics of this fabric and an updated bibliography see Viegas 2014.

[11] The analyses were carried out by Dr. Paul de Paepe, University of Ghent - Geology Laboratory. At the moment we are waiting for the results in order to have detailed information about the fabric and verify the hypothesis about their provenance.

[12] Only through macroscopic observation is impossible to specify whether the amphora comes from the lower Tejo workshops or the Sado's ones (see on this problem Quaresma 2005, about the Lusitanian exemplar of Haltern 70 preserved in the Museo Municipal de Vila Franca de Xira. See also Fabião 2008: 726). A very similar sample comes from Acaçova de Santarém (Alc. Sant. 12854, see Arruda, Viegas and Bargão 2006: 240, figs. 3, 8).

[13] About the content see Colls *et al.* 1977; Parker and Price 1981.

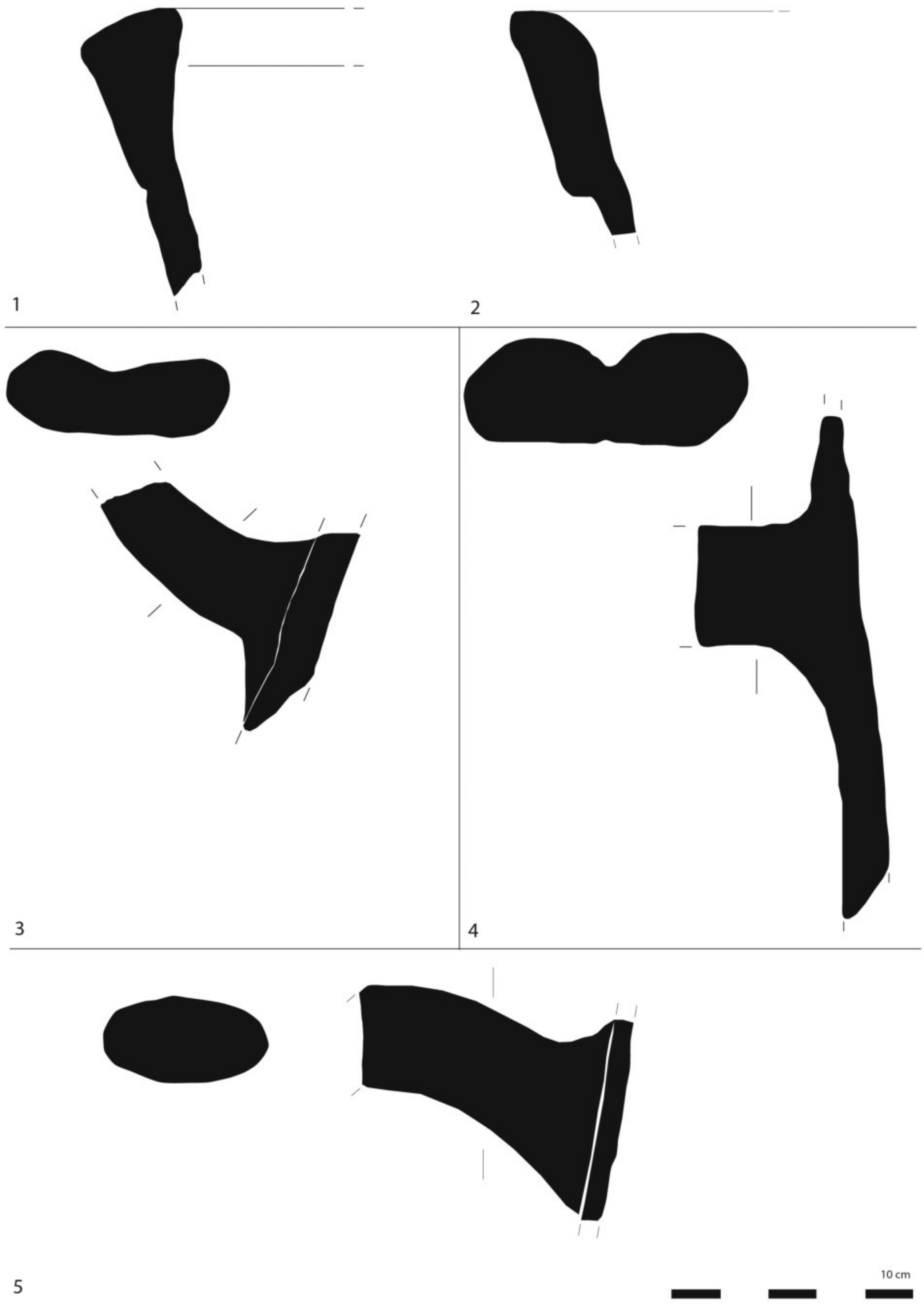

Fig. 257 Wine amphorae: 1. AMM2002B1310.3; 2. AMM1996B2538.23; 3. AMM1996B2635.13; 4. AMM1995D.55; 5. AMM1995B2434.46.

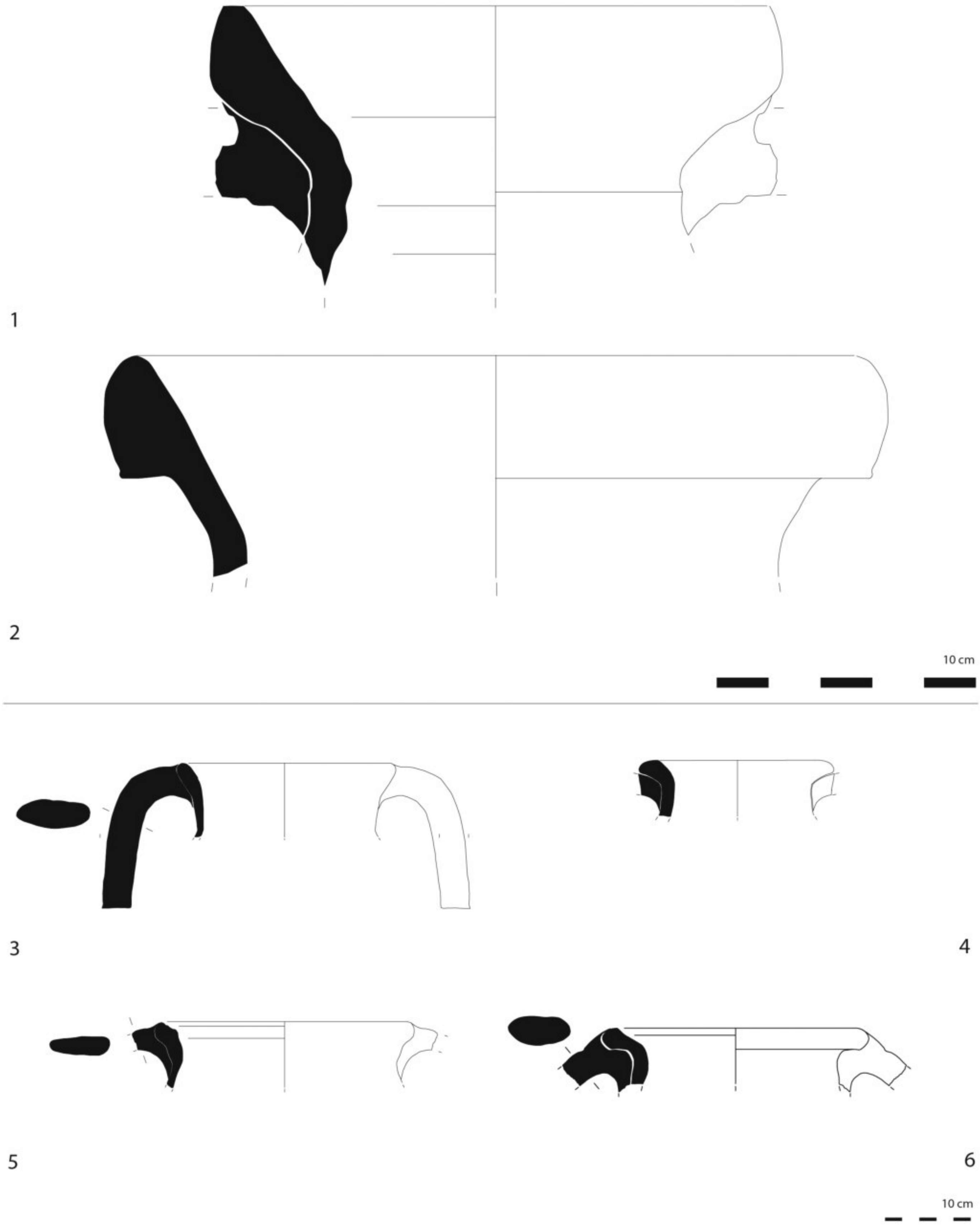

Fig. 258 Wine amphorae: 1. AMM1996B1209.30; 2. AMM2001B1209.5; 3. AMM1995B2537.25; 4. AMM1996B2338.27; 5. AMM2003B1110.9; 6. AMM1997.58.

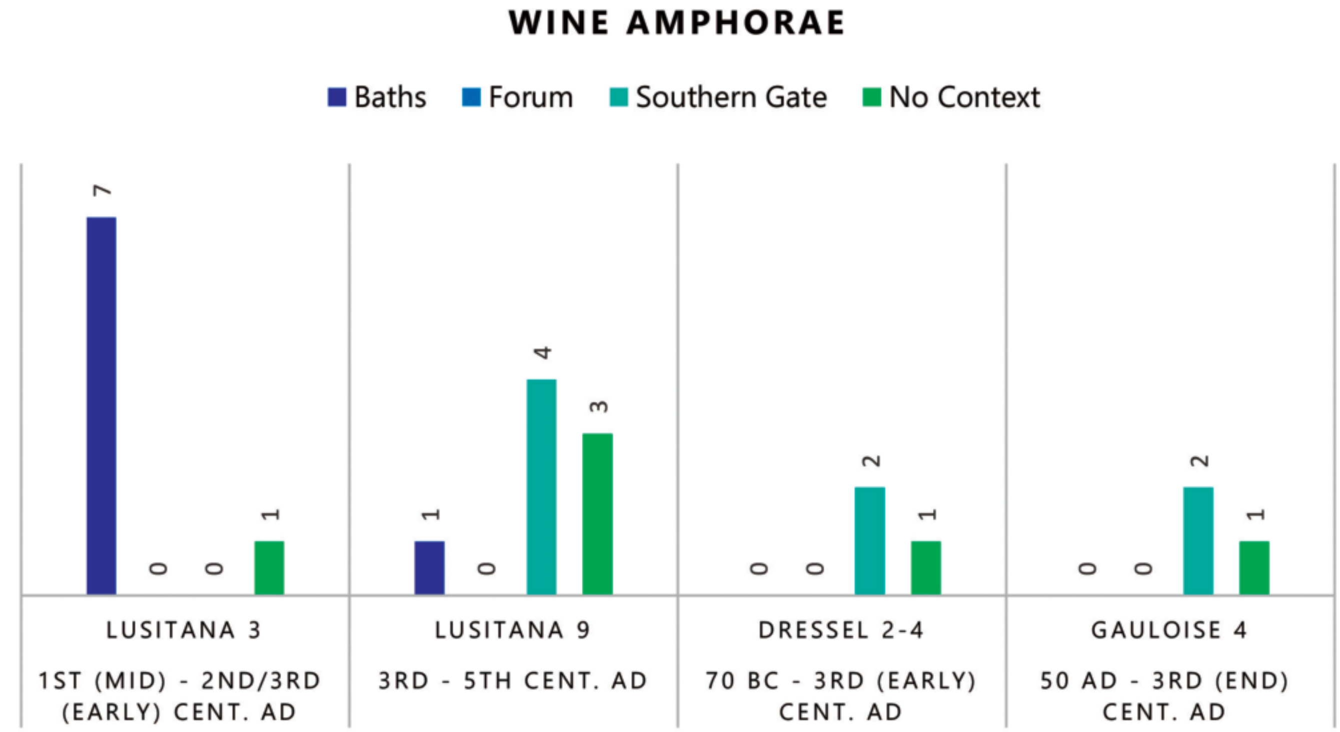

Fig. 259 Imported and Lusitanian wine amphorae per context.

The recurring presence of this form, largely produced in the Sado and Tejo valleys kilns between the middle of the first up to the late second or early third century AD, and at the same time the rare occurrence of imported wine amphorae, particularly Dressel 2-4[14] and Gauloise 4, whose chronology can be traced back at least to the end of the first century BC, are very meaningful.

According to Arruda and Almeida (1999: 334), the low frequency of Italic wine amphorae could suggest a gradual replacement of Baetican imports - proved in *Ammaia* by the discovery of some Baetican Haltern 70 amphorae - on the Italic ones around the end of the first century BC. In other words, the data collected should provide a clear indication of the extent of *Ammaia* regional and supra-regional exchange and contribute to include the town in a new consumption patterns produced by the drastic decline in imports of long-distance wine registered in the whole Lusitanian area (and become tangible in the first century AD), in turn offset by a wider diffusion of local goods carried in Lusitanian containers[15].

The same trend continues unaltered till the late antiquity and involves not only wine amphorae (in particular Lusitana 9 form[16]), but also other goods containers (Fig. 259).

On the other hand, the sporadic presence of some Gauloise 4 amphorae should testify the persistence of a long-distance trade of wine during the early Empire age. As regards the late antiquity scenario, weak evidences could suggest a wine trading from the Eastern Mediterranean area. Nevertheless, only the petrographic analysis will confirm the identification of what could be the latest example of a wine imported amphora, a hypothetic LRA 3 (AMM1995B2434.46), whose relative dating embraces the range from the fourth to the sixth century AD[17].

Fish and fish-sauce amphorae (Figs. 260-263)

If we take into consideration the most diversified group of fish or fish-derived products amphorae, the wide-ranging

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[14] Should be appropriate to remember that Italic wine imports in Portugal were closely related to army's supply and covered the short period between the second quarter of the first century BC and the Augustan age, with a peak around the second and the third quarter of the first century BC (Arruda and Almeida 1999: 333-334).

[15] Signally, a decrease in imports of Italic wine should begin at the end of the first century BC, in conjunction with the beginning of imports from *Baetica* on a large scale (see Arruda and Almeida 1999: 334, where it is stressed that we cannot ascribe the decline in imports only to the presence of similar domestic products).

[16] This form draws a small amphora, usually confused with coarse wares, with an everted lip that is joined to two small handles, a barrel-shaped body, with a maximum width at the middle of the body, thin walls, and a flat bottom. See Fabião 1998: 191-192 (and Fabião 2005b) about the use of this type to trade wine. *Contra* Mayet and Silva 1998, 2009, in favour of the hypothesis of a fish content. At present, there is no official scientific stance on the two hypotheses.

[17] Murialdo 2001, and before Arthur 1998, argue on a probable use of this container to trade wine; indeed, a doubt about the content already existed and the recent chemical analysis on a possible variant of LRA 3 from the excavations carried out in Via de' Castellani (Florence) in 2000 and 2004, showing as result a solid residue that can be interpreted as a coating compatible with a wine as well as the main content of the amphora (Pecci, Salvini and Cantini 2010: 364), does not allow us to confirm or deny the attribution proposed in the literature.

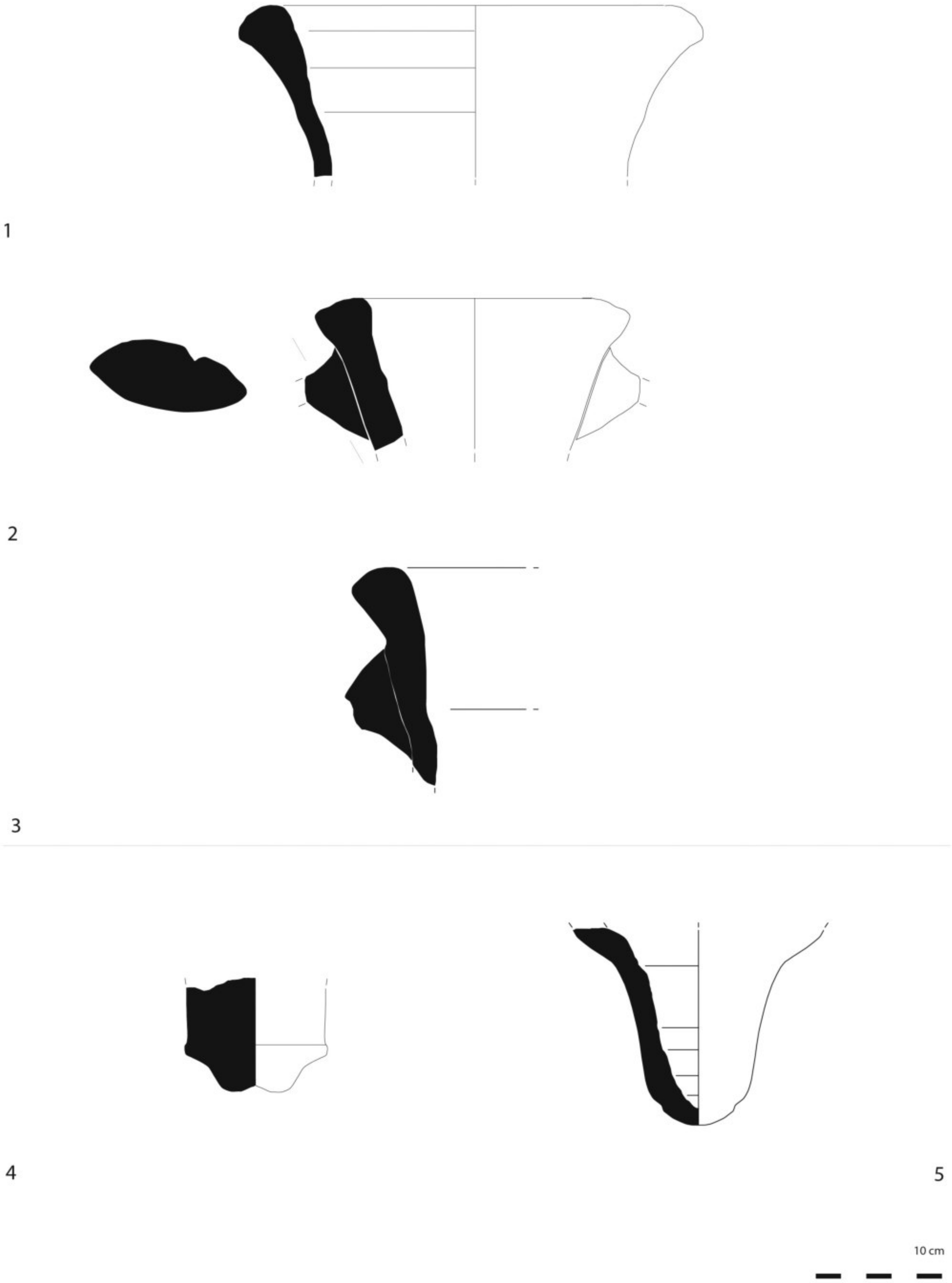

Fig. 260 Fish and fish-sauce amphorae: 1. AMM2001B1209.6; 2. AMM1996B2434.5; 3. AMM1997.33; 4. AMM1996B1101.8; 5. AMM1997.17.

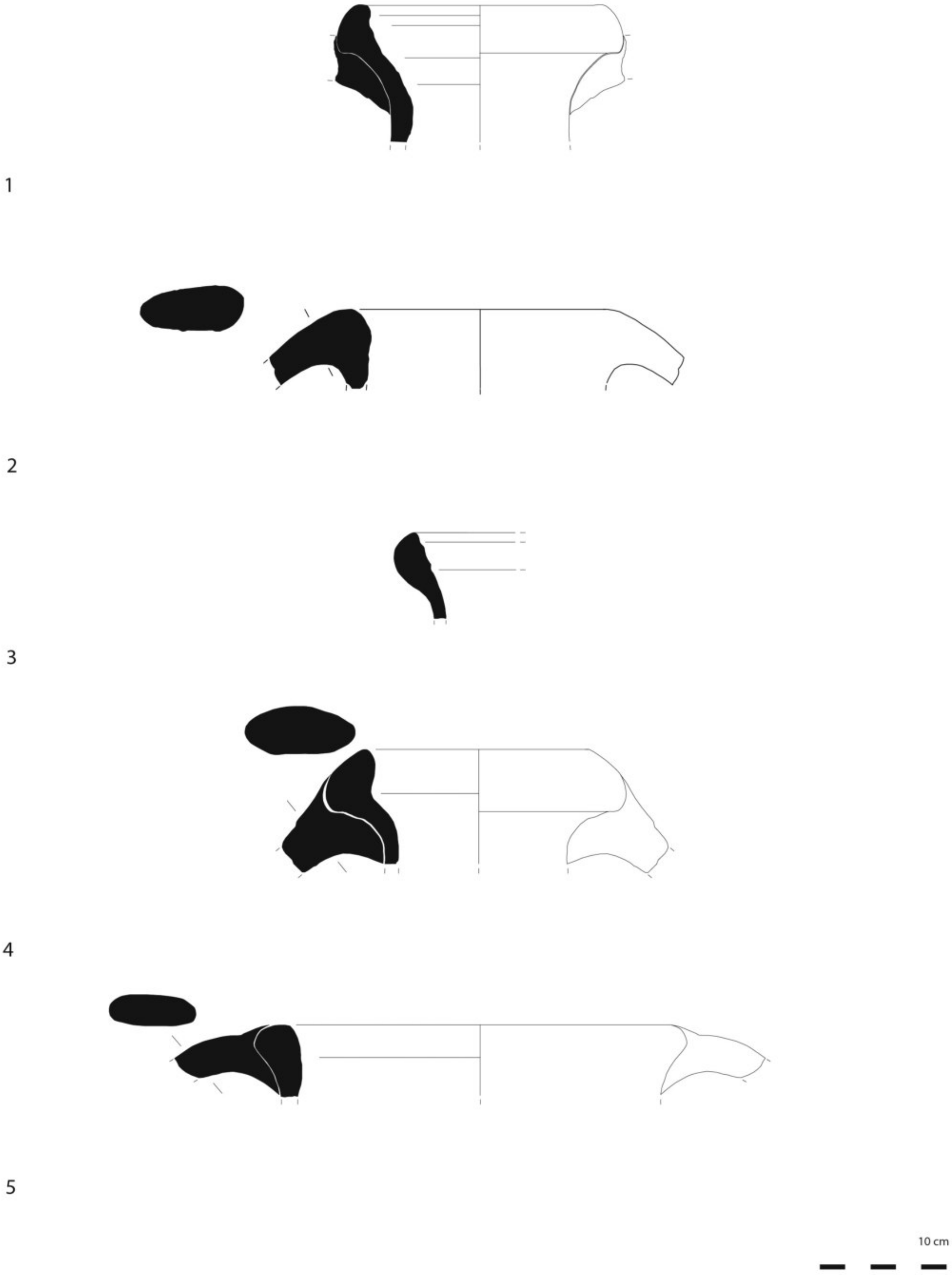

Fig. 261 Fish and fish-sauce amphorae: 1. AMM1997.64; 2. AMM1995B2536.21; 3. AMM1997.25; 4. AMM1995B2537.26; 5. AMM1997.60.

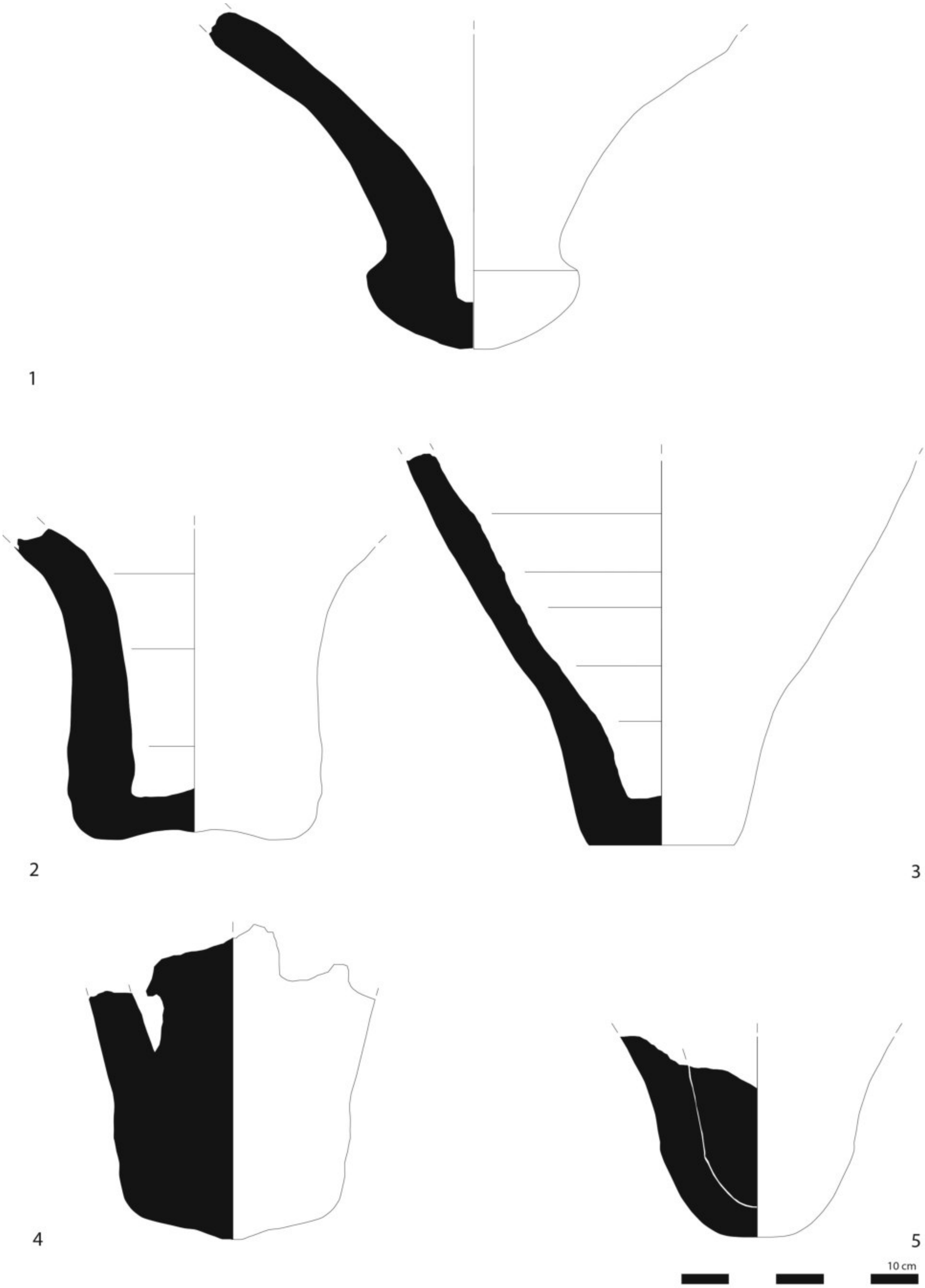

Fig. 262 Fish and fish-sauce amphorae: 1. AMM1997.62; 2. AMM1996B2633.40; 3. AMM1997.40; 4. AMM1995B2337.2; 5. AMM1997.53.

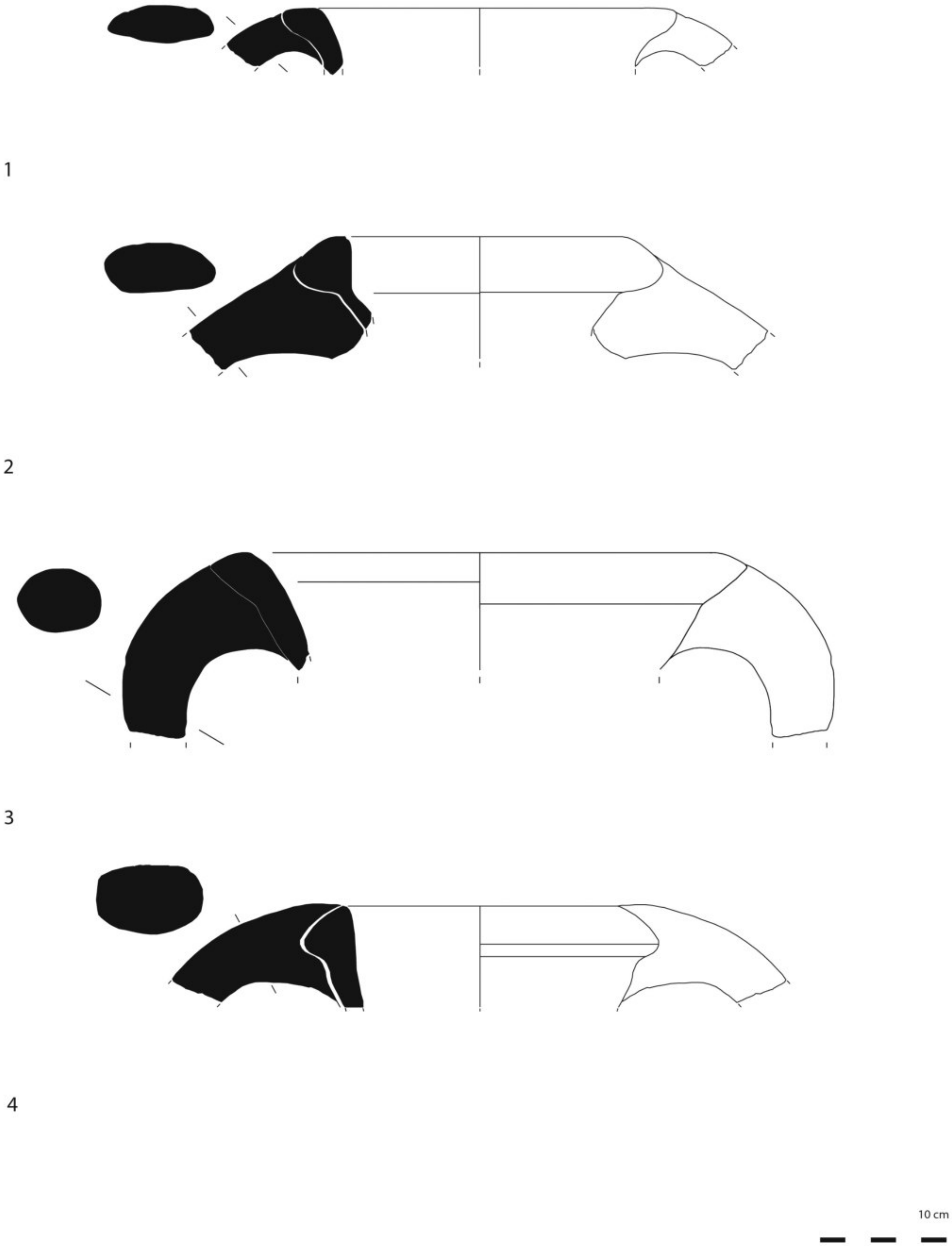

Fig. 263 Fish and fish-sauce amphorae: 1. AMM1997.54; 2. AMM1996B2302.37; 3. AMM1996B2736.15; 4. AMM1995A.54.

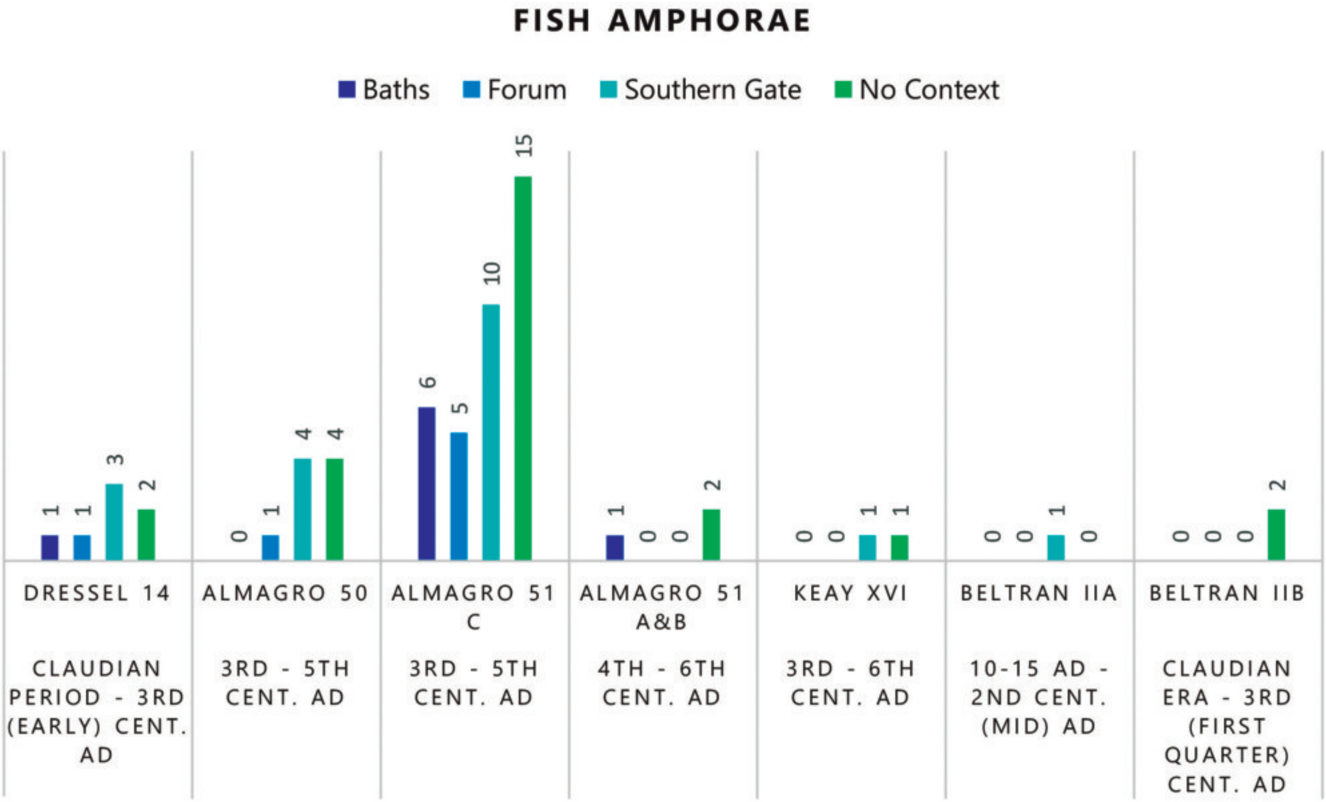

Fig. 264 Imported and Lusitanian fish amphorae per context.

picture is quite similar and Lusitanian products look clearly predominant against a low incidence of imports (Fig. 264).

Very few traces attest fish and fish-sauce imports from the Baetican coast: Beltran IIA and Beltran IIB, largely manufactured in several workshops in the modern Southern Spanish provinces of Huelva, Cádiz, Málaga and Granada[18], reached *Ammaia* between the first and second century AD, as just the three recorded fragments prove (AMM1995 B2434.4; AMM1997.30; AMM1997.31), but most likely already in the course of the first century AD they were placed side by side to Lusitanian fish containers and finally were completely replaced by them.

Five different Lusitanian fish amphorae cover the wide chronological range that goes from the first to the fifth century AD.

Among the oldest attested types, Dressel 14 form, generally dated from the first century AD, a late variant (AMM2001B1209.6) was identified, generally smaller than the oldest one, with a short neck and smaller handles, already known in the lower Sado (in Abul and in Pinheiro) and dating in the transitional period between the second and the third century AD (Mayet and Silva 1998: 119; 2009: 63). The hard, rough sandy fabric with abundant, ill-sorted inclusions of red, brown, grey and limestone elements could bring back to Tejo or Sado valley kilns (Raposo and Viegas 2013).

The distinctive types of the mid and late Empire period are Almagro 50, 51c e 51A & B forms, broadly made for a longer period, between the third and the sixth century AD[19]. The wide spread of these smaller containers follows the alterations in Lusitanian economy already started in the second and third century AD (Fabião 2009: 575-576; Fabião and Carvalho 1990: *passim*), and involving also the fish-processing sites[20].

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[18] García Vargas, Martín-Arroyo and Lagóstena Barrios 2012 (origin of Beltrán IIA); Bernal Casasola, García Vargas and Díaz Rodríguez 2012 (origin of Beltrán IIB). The specimens from *Ammaia* seem mostly attributable to the Bay of Cádiz fabric, a hard, rough sandy yellowish/whitish fabric, as result of the use of seawater in the treatment of clay pastes, with grains of quartz, white and transparent, silver mica and red and brown iron ore (about Cádiz fabric characteristics see Lagostena 2005a, 2005b).

[19] The continuity of production and export of fish products in the Western Iberian Peninsula until Late Antiquity has already been clearly established (Fabião 2009: *passim*).

[20] Briefly summarized, the fish-processing installations history in Portugal started at the end of the first century BC (Tróia, Casilhas), but the large and strong production began only in the following century, in some cases going on until the beginning of the fifth AD (Trakadas 2005: 58; see Edmondson 1987: 108). Quaresma (2013b: esp. 392) stresses how the crisis of this sector was one of the outcomes of a more generalised economic change, occurred between the second and the third century, and - quoting Reynolds 1995: 388 – involving "the evolution of new smaller containers, [...] the reduction in the number of sites producing to export and [...] the increased numbers of small factories for local markets".

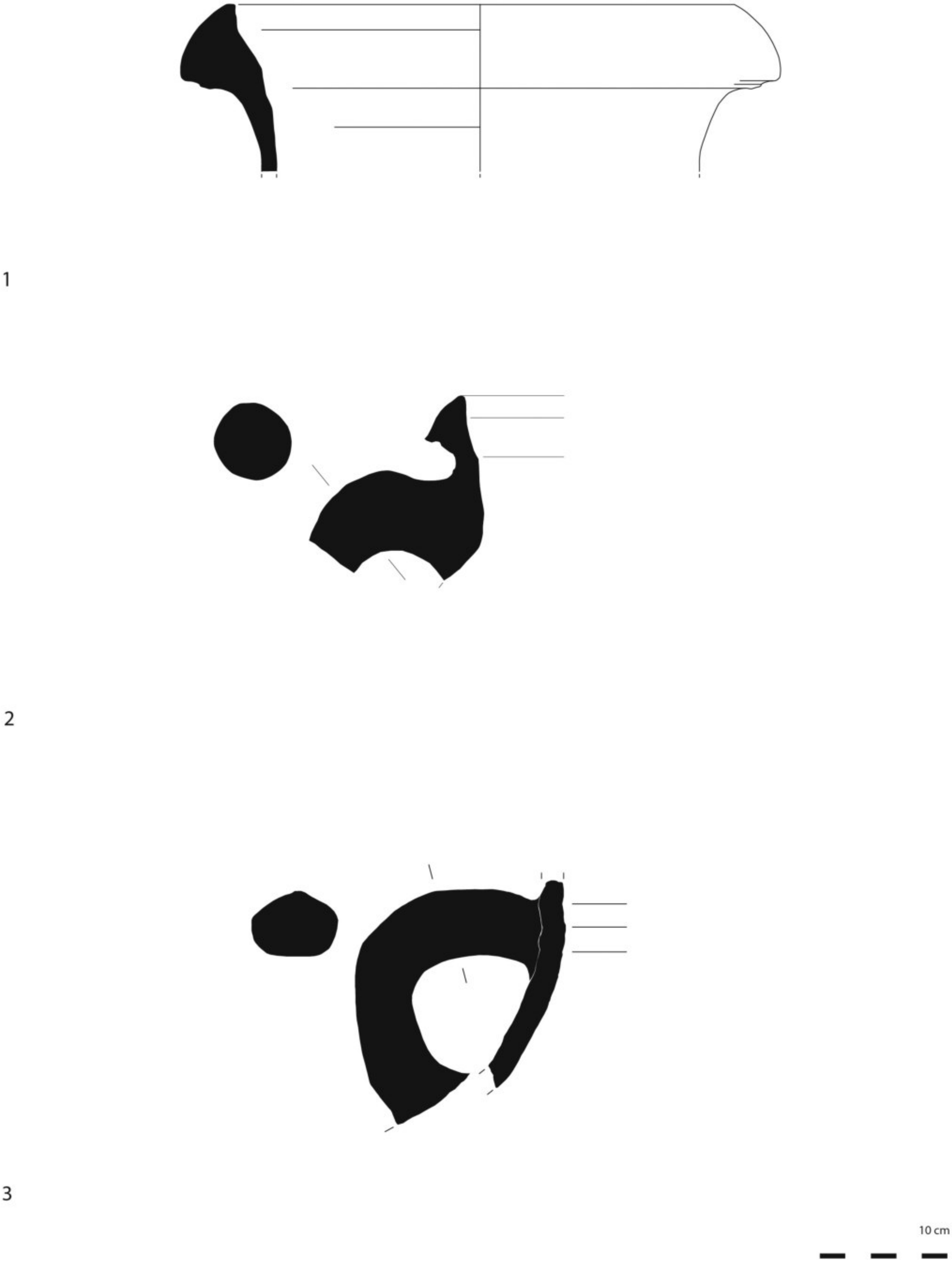

Fig. 265 Olive-oil Baetican amphorae: 1. AMM1996B2302.32; 2. AMM1997.22; 3. AMM1995B.57.

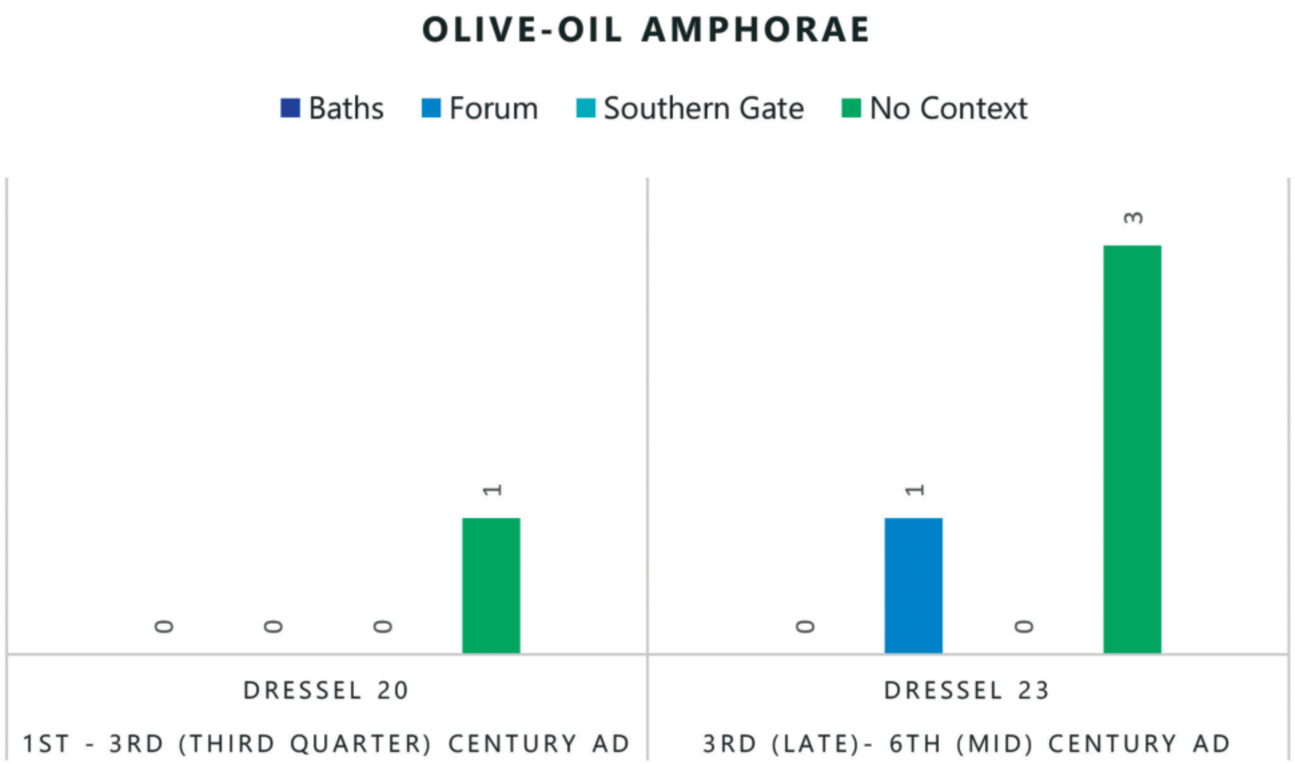

Fig. 266 Olive-oil imported amphorae per context.

Widely produced, the Almagro 51 form stands out for a significant morphological variety[21]: piriform or fusiform body, short inverted conical spike, cylindrical, narrow or extended neck, jutting triangular, sub-rectangular or round shaped rim, always with an internal inflection, broad handles sharply bent round and with a single or many narrow grooves[22]. The specimens found in *Ammaia*'s stratigraphic contexts almost certainly belong to Western Lusitanian productions (numerous kilns along the valleys of the Tagus and Sado have been already identified and studied[23]), with mixtures mainly difficult to distinguish, as the geological context is very homogeneous (Mayet, Schmitt and Silva 1996).

The hard coarse fabric is quite similar to that of Dressel 14b with numerous inclusions of quartz, feldspar and mica and sometimes small black or ferruginous (iron oxides) nodules, the colour is reddish, brownish or orange, occasionally with grey-green or brown core.

Less but still present some exemplars of Almagro 50 form, whose origin can be assigned to the Western *Lusitania* area[24], having the same fabric characteristics of the already quoted Almagro 51c and Dressel 14 specimens. From a morphological point of view, this form is characterized by a huge variety of rims, handles, bodies, bases[25]. The exemplars from *Ammaia* mostly present everted rims with triangular marked sloping section (e.g. AMM1997.52) or sub-triangular rounded rim (e.g. AMM1995B2334.41; AMM1996 B2736.15), and handle with elliptical or ovoid shaped section; no data are available about the bodies and the bases.

Sporadically the presence of Almagro 51 A & B form has been observed (Pinto and Magalhães da Silva 2014) - in two uncertain cases possibly local imitations, homogeneous type, but with very characteristic features: high rim, short but large neck, handle with marked curvature, piriform body and solid long bottom-base. The hard-fired fabric is rough/harsh, with irregular fracture and shows a dark-red core and dark-red-orange external surface; abundant, generally well-assorted and variable size inclusions of limestone and grey and brown elements. Production workshops of this form have been identified in several places in the Sado valley (Quinta da Alegria - Setúbal, Herdade do Pinheiro - Alcácer do Sal, Abul II - Alcácer do Sal), while at the moment, despite of the petrographic characteristics of the fabric, a production in the central Tejo valley is unknown.

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[21] Unfortunately, our data did almost never allow to distinguish the two variants B and C well known in the scientific literature (Mayet, Schmitt and Silva 1996; Étienne and Mayet 2002), with the exception of two short hollow bases perhaps attributable to the earlier variant (AMM1996A1101.7; AMM1997.40), and the everted rim (AMM1996 D2302.31) that may be the late variant.

[22] Details about typological evolutions in Viegas, Raposo and Pinto 2014, with references.

[23] Tejo valley: Porto dos Cacos (Alcochete); Quinta do Rouxinol. Sado valley: Zambujalinho (Palmela); Quinta da Alegria (Setúbal); Herdade do Pinheiro; Abúl (Alcácer do Sal); Enchurrasqueira; Vale da Cepa. See Viegas, Raposo and Pinto 2014, with references.

[24] As far as we know at the moment, none of the specimens is associable with a Southern Lusitanian production, even well recorded for this form.

[25] Almeida and Raposo 2014a, figs. 4, 6, 7, 8, 9.

Also sporadic are the Keay XVI amphorae (Almeida and Raposo 2014b, with references). Two single exemplars from *Ammaia* seem to be ascribable to this type, produced in the workshops of the valley of the Tagus (and Sado) starting from the end of the second – beginning of the third century AD, with documented evidence of increased production in the fifth century AD (Quinta do Rouxinol)[26].

Other goods (Fig. 265)

In general terms, our data are still insufficient in order to estimate the bearing of other goods trade from and to *Ammaia*, with the exception of the rare occurrence of olive-oil Baetican amphorae from the Guadalquivir valley (Fig. 266). In spite of the very low number of Dressel 20 and 23 amphorae[27], supply ought to have been regular and *Ammaia* is thus joined to the numerous centres of *Lusitania* when the presence of Baetican oil was recorded (Fabião 1993-1994)[28]. Of course, it is essential to highlight that olive-oil import does not imply necessarily an absence of a Lusitanian production; indeed, as it is Baetican oil, associated with the institutional supply, the reason must be found elsewhere.

Otherwise, as already stressed by Fabião (1993-1994: 238), regardless of the numbers, the finding of Dressel 20 and Dressel 23 itself states to the existence of two trade-tracks, one coastal and one internal, which run along the mining centers and reached the main urban towns and the villas, as well as the wide-ranging diachronic provides evidence on the commercial relationship seamless.

Only one isolated proof of a large-scale trade not directly associated to foodstuff is represented by the exemplar of Richborough 527 (AMM1996B2433.4**)**, a short cylindrical amphora with small handles and an almond-shaped rim, used for trade *alum* from Lipari Island (Williams 2005a, with references). This type chronologically ranges from the end of the first century BC to the second century AD.

d Imports and Lusitanian amphorae in *Ammaia*: a timeline

The records so far collected do not allow to draw final conclusions: only the progression of the investigation (particularly on the Quinta do Deão old excavations objects) may provide more information in order to have answers about distribution patterns, imports' chronology and other open questions, and to offer an interpretation of the results, comparing *Ammaia* status with the other coeval Lusitanian towns' one. Even if susceptible to variations in quantity and percentage, when schematised in a timeline, our data show an uninterrupted (but weak) system of imports, that we can follow throughout the entire lifetime of the town, and in turn proves its dynamism until almost the fifth/sixth century AD. But looking at the single products, it comes to light a gradual replacement of the imported goods with the Lusitanian ones. In this perspective, the rare but significant presence of Italic, Gallic and Asian wine amphorae should be considered as signs of a luxurious (and random) market, probably related to other goods. On the other hand, regarding common consumer goods, a clear dependence from the Tejo/Sado areas emerges, especially in what concerns the supply of fish sauces.

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[26] Raposo, Antunes and Santos 2013.

[27] Berni Millet and García Vargas 2012; Berni Millet and Moros Díaz 2012. For a distribution of kilns in the Guadalquivir valley, see detailed maps in Berni Millet 2008.

[28] Furthermore, this presence contributes to disavow the wrong conviction that ascribed the poor recoveries of Baetican oil amphorae in Portugal with a never proven bearing of African oil: in *Ammaia*, as in other Portuguese ancient towns (among the best investigated contexts, see e.g. Santarém, cf. de Almeida 2008: 293), has not been found the presence of containers for African oil.

V.6 THE GLASS

Mario da Cruz

a Introduction

Ammaia possesses one of the best Roman glass collections found on Portuguese soil, if not the best one. This distinction is not due to a particular outstanding quality of the glasses, neither to its quantity, but is mostly due to a very good preservation of the glass vessels found so far. For an archaeological site that just recently has started to be systematically surveyed and excavated, *Ammaia* counts already with a remarkable collection of complete and intact glass vessels, which is not very common. It also happens that these vessels display a shiny "brand new" look thanks to the Aramenha's granitic soils, since acidic soil, which is the case, preserves the glass better than alkaline soils. It is expectable that all of these vessels came from *Ammaia*'s necropolis.

Centuries of abandon, ruins dismantling, agriculture and grave pillage explain, in a way, the circumstances in which the glasses where collected and how they ended up in private collections and museums (see Introduction: 5-7). At the present stage of the research we were able to account a total of 36 glass vessels, 31 of which intact. Nevertheless, this number might be just the tip of the iceberg considering that much of the old archaeological finds quickly "loose memory" of its origins and end up under the "unknown provenance" tag. It is true that 36 complete glass vessels do not seem to be a number particularly impressive if compared with some international glass collections, but the scenario changes if compared with other important Portuguese collections. For instances *Conimbriga* counted with only 3 complete glass vessels (Alarcão and Alarcão 1967: 13; Alarcão *et al.*: 1976), and *Bracara Augusta* with just 7 in 2001: 4 intact unguent bottles found together in the same grave and 3 other vessels complete but broken (Cruz 2011). However, the main explanation for such a great number of complete glass vessels may lay in some singularity of *Ammaia*'s funerary rituals. It seems that glass was very appreciated by *Ammaia*'s inhabitants and frequently chosen to serve the beloved ones in the after life. We can also easily guess the presence of a local glass production making glass largely available and appreciated. Another singularity of this collection is the supremacy of plates and bowls over unguent bottles and large jars, the main items found elsewhere in Roman graves. All the evidences tell us that plates and bowls with out-turned rims and tubular base rings, so common in *Ammaia* and in the region, are of local production.

The first mention of glass in *Ammaia* is due to José Leite de Vasconcelos (Vasconcelos 1935: 7) but it was Jorge de Alarcão who first studied and published the collection kept in the National Archaeological Museum (Alarcão 1971). Almost at the same time Josefa Conceição Neves published a private collection assembled and kept by António Maçãs (Neves 1972). More recently, some of *Ammaia*'s glass vessels kept in the National Archaeological Museum took part in an exhibition dedicated to the Portuguese ancient glass (Cruz 2009a). Finally, in 2011 Delmira Maçãs donated the legacy of her father António Maçãs to the National Archaeological Museum.

Having these impressions in mind it was with great expectations that the study of the Southern Gate glass assemblage began. Immediately, evidences for glass production started to pop up in the form of raw glass and glass waste, scattered in quite a large area (see Tab. 1) along with other glass fragments, telling us that we were in the presence of the remains of a glass workshop.

There were, however, a few exceptions. Glasses not closely related with glass production could be found in six squares: the black bead (no. 175) in square 2337, the Hofheim cup (no. 79) in square 2433, the black gem (no. 179) in square 2434, the reused lamp (no. 202) in square 2437, the bowl with facet-cutting (no. 112) and the campanulate bowl (no. 140) in square 2438, the convex bowl (no. 74), the ribbed bowl (no. 75) and two thin-walled cups (nos. 82 and 83) in square 2533. This assemblage is mostly formed by glasses that we would not expect to see in the Southern Gate glass workshop, either because they do not coincide in time, like the first century bowls and cups, or because they simply do not belong to the local production, like the bowl with facet-cutting or the lamp, although the collecting of broken glass for recycling can sometimes mix up glasses from different origins.

The chronology range goes from the first century BC to fifth century AD. The oldest piece is the ribbon glass (no. 74) and the earliest is the campanulate bowl with white trails (no. 141). There is an early group of around 10 vessels not exceeding the beginning/middle of second century, a group of 7 bottles dated in between the first and third century and a group of 4 vessels from the second/third century. The campanulate bowl is the only example to clearly exceed the fourth century, meaning that it could be the only glass having been brought to the Southern Gate area after the abandon of the workshop. None the less, the vast majority of the glasses came from the glass workshop contexts or can fit in the same period.

Regarding the preservation of the glass we observe that most of the fragments are rather small suggesting that they could have been intentionally broken down in small fragments in order to facilitate the storage and the fusing. There is not a single complete vessel and only one with a complete profile (no. 99).

b The *Ammaia*'s Southern Gate secondary workshop

Recent studies have radically changed the way glass production in Roman times is perceived[1]. If before we had the vision of a single glass production cycle, represented by medieval and modern workshops, from now on we must consider the existence of two separated stages (Price 2005: 168). A first stage called primary production, where raw materials are transformed into raw glass and a second stage, called secondary production, where raw glass is transformed into objects and vessels. This distinction between primary and secondary production, far from being a mere detail, had enormous implications in terms of the democratization of glass in the Roman world. Unlike primary production the secondary production has few constraints on its expansion. As a matter of fact, the simplicity of the secondary workshops and its technology has led to its expansion throughout the Roman Empire, wherever there was a reliable supply of raw glass and a market for their products. We can say that the glass "industry" has born and grew with the Empire.

In terms of archaeological research the implications are equally important. The vision of Roman glass vessels as rare items, imported from a limited number of production centers, like fine pottery, is no longer valid. From now onward we have to admit that the reality is more complex and can be compared with pottery as a whole. There is "fine glassware" produced in a few highly specialized centers and "common glassware" produced in almost every single town. During the fourth/fifth centuries, secondary glass workshops can be even found in rural areas and small towns, like in the case of Tui and Vigo (Cruz 2009b: I, 244-251). Even though we can see the same type of vessels being produced in different parts of the Roman Empire, the variability and originality of each centre is such that identifying and characterizing the different productions can be an endless and overwhelming task.

This general introduction was necessary to understand the scenario in which *Ammaia*'s glass workshop is included and, in a way, to demystify the mere existence of local glass production in a small and remote town as *Ammaia*. Even though we do not yet know the full extend of secondary glass production in the Roman province of *Lusitania* it was already possible to identify three glass workshops in the capital *Augusta Emerita* alone (Caldera de Castro 1983, 65) and one in *Augustobriga*, the modern Talavera la Vieja in the Spanish neighbour province of Cáceres (Aguilar-Tablada and Sánchez de Prado 2006). In 2010 a total of 100 secondary glass workshops had already been identified in France alone (Foy 2010: 31).

	28	27	26	25	24	23	22	21	20
33		9 (2)	13 (2)	4	1		1 (1)	(3)	
34		22 (1)	10 (4)	(2)	1				
35		7 (5)	10 (4)						
36		3 (1)			3 (3)				
37			1 (3)	29 (38)	1	1			
38					2	3 (3)			

Total: **121 (72)**. Unknown location: **8 (2)**.

Tab. 1 Glass dispersion in the Southern Gate sector. The numbering of squares reads from top down, right left (glass waste and raw glass in round bracket).

Unfortunately, in the case of *Ammaia* we were not able to identify the exact location of the glass-working structures. However, the concentration of glass waste and raw glass in the square 2537 (Tab. 1) suggest that the East Tower could have been temporarily used as a glass workshop. The occupation and adaptation of existent structures was not unusual in Late Antiquity, there are cases in which glass workshops were established in bath houses, like in the case of Cesson-Sévigné, France (Foy and Nenna 2001: 55), or even in public buildings, like the *Crypta Balbi* in Rome (Saguì 1998). Other possible location is the west side of the road leading to the Southern Gate, where a second concentration of waste glass and raw glass was found, though not as impressive as the one in the East Tower. There is also the possibility

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[1] The revolution in the way we perceive the Roman glass activity was basically led by underwater archaeology, with the discovery of raw glass in many shipwrecks, and by archeometric studies. Overland Archaeology has been giving its contribution with the excavation of countless secondary workshops, all over the Roman Empire, but also with the excavation of some primary production sites in Israel and Egypt (Foy and Nenna 2001: 35-39).

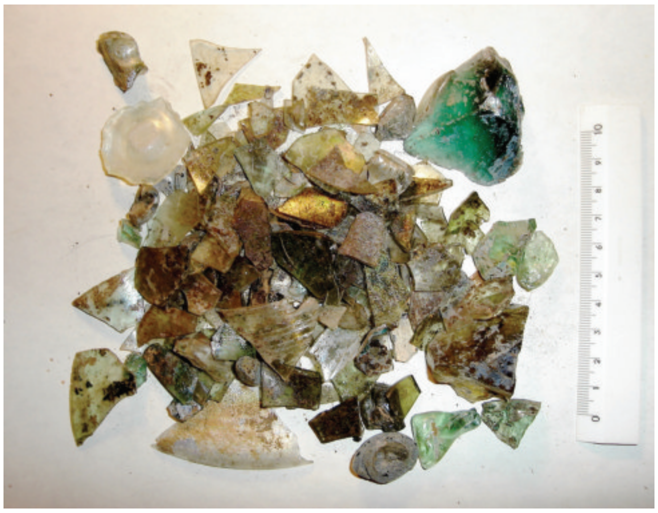

Fig. 267 Cullet - Scraps of broken or waste glass gathered for remelting. See in particular lumps of raw glass (right side) and waste glass (bottom side).

that all of this glass could have been brought in from other parts of the settlement. What we cannot discard is the existence of a glass working site somewhere in *Ammaia* because that is the only possible explanation for the presence of glass waste and raw glass.

Since we have not been able to locate the workshop and identify its structures we cannot know its exact period of operation, however we can try to date the moment of it destruction through the chronology of the associated glasses. The latter forms associated with glass waste are the conical cups with applied blobs (nos. 95, 116 and 117), whose production started not earlier than the end of the fourth century. The only find later than the end of fourth century is the campanulate bowl with applied white trail, no. 141, found in an archaeological context not related with glass-working, dated to the fifth century. We can then conclude that the workshop was closed by the end of fourth century or in the beginning of fifth century at the latest.

Imported raw glass was not the only source of glass available for *Ammaia*'s glassmakers since we need to keep in mind that glass can be recycled. In this particular aspect, glass and glasswork have more affinities with metalwork than with pottery. The practice of collecting broken glass is documented in Rome since the first century AD in one of Martial's epigrams (Price 2005: 169). Recycling glass was also one of the ways that glassworkers had to lower the prices of glass products. Broken vessels and window glass were collected as cullet for remelting and could end up mixed with raw glass and glass waste generated in the workshops (Fig. 267).

Crucibles are supposed to have been introduced in glassmaking in the fourth century, gradually substituting tank furnaces (Foy and Nenna 2001: 61-66). This simple fact gives us already a good chronological indication since we know that they were used in the Southern Gate workshop because of the marks they left in some raw glass chunks, like in the case of nos. 1 and 2. The crucibles are in this way indirectly perceived by the impressions they left in raw glass. In some cases it is even possible to find clay clinging to the raw glass surfaces that had been directly in contact with the crucibles.

Raw glass

As explained before, Roman glass came from a limited number of primary production centres where raw glass was made from raw materials, basically sand and mineral soda, in large rectangular tank furnaces. The slabs of raw glass obtained this way where then broken down into smaller pieces or lumps and shipped overseas and overland to provide secondary workshops with clear glass. Once in the local workshops, these lumps could be even broken down into smaller chunks and chips (nos. 1 to 34) in order to facilitate the fusing of the glass. However, it is not always possible to tell apart what is "primary raw glass" (glass freshly imported from primary production centres) and what is "secondary raw glass" (glass that has already been melted locally, mixed up with cullet and let to cool inside the crucibles). We can only guess that the lumps of clear glass with sharp fractures are primary raw glass and the ones showing impurities, mixed colours, clay and sand incrustations or spongy surfaces are from secondary raw glass. The majority of the raw glass found in *Ammaia*, like nos. 1 and 2, falls in the second case.

Chemical studies have been demonstrating that the vast majority of Roman glass found so far in the West belongs in fact to only four main groups of chemical composition, all of them originated in the Eastern Mediterranean in different periods (Foy, Picon and Vichy 2000; Picon and Vichy 2003). According to the proposed chronology of the workshop, the glass in *Ammaia* should fit in just two composition groups, three maximum: group 3, the natural colored blue/green glass dated in between third century BC to ninth century AD; group 1, the yellow/green glass dated in the end of fourth century to fifth century. It is also possible that the glass from group 4, a colorless and greenish colorless glass from the second/third century, could be yet found among cullet. At this stage of the investigation and without chemical analysis it is not possible to say exactly which glasses belongs to which group but we can fairly guess that for example the raw glass no. 2 belongs to group 3 and raw glass no. 1 to group 1. The dark blue/green glass no. 26 is supposed to be also glass from group 3 but artificially colored. This strong color glass was surely used in small quantities for trail decoration like in bowls no. 130 and 133.

No. 35 is an assemblage of small lumps of very altered and impure glass that we classified as glass scoria by comparison with metalwork.

Waste glass

Waste glass is a general name given to different categories of glasswork by-products that normally finish in the cullet pile to be remelted. In this sense, the mere existence of waste glass, if correctly identified, is enough evidence of a glass working site. But it can give us other important information, like the kind of vessels produced, the techniques used and when the production was interrupted.

From no. 36 to 51 and 58 to 68 we have a category of glass waste called moils, which are the waste from around the end of the blowing iron, left behind after the parison had been detached. In Portugal it is known as "*boca de cana*" (blowing iron mouth). From no. 36 to 46 are some lid-like moils with lower cracked-off edges. These fragments are in a way a sort of the negative of beakers and bowls with cracked-off edges, like the examples 36 and 37 found in association with bowls 89 and 90 clearly show (see Fig. 182). There is a wide range of colours, rim diameters and thickness, reflecting the equivalent variation in the vessels. Considering the quantity of these lid-like moils we can advance that the Southern Gate workshop produced mainly beakers and bowls with cracked-off edges. Nos. 47 to 49 are the other end of moils, which is the waste glass immediately in contact with the end of the blowing iron. In most of the examples it is still possible to see tiny chips of metal incrusted in the glass, in the top edge. These sharp concave "rims" preserve not only the iron but also the diameter of the blowing iron. In the cases presented here we estimate that could had been used two blowing irons: one with an internal diameter of around 5mm (nos. 47 and 49) and other of around 8mm (nos. 48 and 50).

No. 50 is a small moil with both edges; the top one is the one that was in contact with the blowing iron and the bottom edge with a fire-rounded lip, obtained when the moil was separated from the vessel while the glass was still very hot, maybe with the help of shears. This characteristic suggests that, unlike the previous moils, this moil is a by-product of a vessel the mouth of which had been fire finished, maybe a bottle or a jug.

Nos. 51 and 52 are two very interesting cases of glass waste because they are not really by-products of the glass-making process but failed attempts to make a vessel. They are like "aborted" vessels. No. 51 is a glass bubble that went wrong and was putted away to cool. No. 52 is an elongated bubble taking the form of a test tube and putted away to cool as well, without being finished.

Nos. 54, 55 and 70 to 73 are fragments of glass with tool marks, like pincers, jacks or shears. No. 54 is a thick trail or wrap that was been pulled and folded, maybe associated to the process of making handles. No. 55 is a fragment of waste glass with pincer marks and a clipped edge.

Nos. 56 and 69 are pontil wraps, hot glass that was wrapped on a pontil[2] and used to sustain a hot vessel from the bottom. As we can easily guess, this pontil wrap is associated with vessels with fire-rounded rims or tubular rims and not with cracked-off rims that require no reheat.

Glass productions

The identification and characterization of the Southern Gate glass production is not an easy task mainly because of recycling. The collection and trade of broken glass is a practice as old as glass itself. Glass from different sources could end up being mixed with waste glass from local workshops in their cullet piles. Although, assuming that it was collected in the region, we have to admit that most of the recycled glass is in fact of local production. That is to say that a glass vessel largely represented amongst a workshop cullet pile has strong probabilities of having been made in that same workshop. A more certain and effective way of identifying local productions is by the observation of waste glass and more specifically by defective or rejected vessels (vessels that went wrong during the working process and were not finished or sold). We can also imagine that in case of a sudden abandon and destruction of a workshop the last batches of vessels are the only ones left behind. Even if waste glass and last batches can be the best and more accurate indicators of a workshop glass production we cannot discard the statistic and stylistic studies.

The peculiar production cycle of the Roman glass has its implications in chronology as well. Since we do not have the structures of the workshop we are not able to establish when it was build and consequently when the production started, for how long it went on and what glass objects were produced during its lifetime. Therefore, we can just assume that the glass vessels shown here are probably the last examples to be manufactured. Keeping all these limits in mind we can nevertheless advance a fairly complete image of the Southern Gate glass production around the end of fourth century.

The most representative and abundant group of vessels are the arched cups and bowls (Fig. 268). They were produced in the Southern Gate workshop as proved by the association between cups nos. 89 and 90 and their respective moils 36 and 37 (Fig. 182). We also notice a predominance of lid-like moils amongst the Southern Gate waste glass, a clear indication of the production of vessels with cracked-off rims. Besides being the most abundant and representative of all Southern Gate forms they are as well the ones that show a wider range of variation in shape and decoration. In terms of shape they go from deep conical cups to shallow bowls, with many intermediates shapes, all footless. In terms of decoration there is predominance for plain exam-

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[2] Also known as ponty, rod iron or gathering iron.

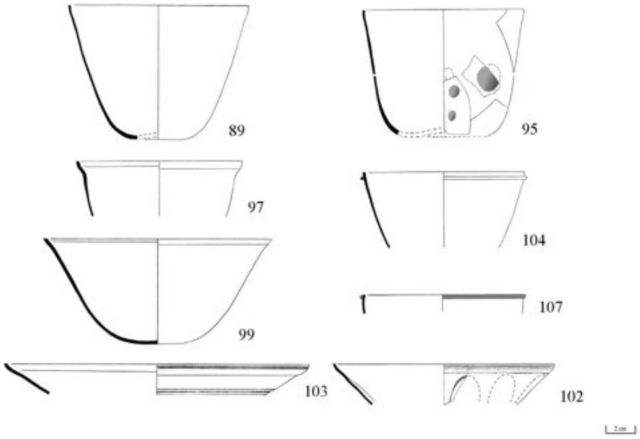

Fig. 268 Arched cups and bowls, variation in shape and decoration: plain cup (no. 89), plain bowls (nos. 97, 99), shallow bowl with wheal-cut lines (no. 103), cup with applied blue blobs (no. 95), cup with applied self-coloured trail (no. 104), bowl with coloured trail (no. 107), bowl with wheal-cut lines and indents (no. 102).

ples, sometimes with simple bands of tooling lines, followed by the examples with unmarvered horizontal trails and finishing with the less common cups with applied bobbles and the bowls with indents (see, *supra*, p. 192-193). The trails can be in the same colour of the walls or in a contrasting colour, like opaque white or translucent dark blue/green. To prove once more that we are in the presence of a local production we have found 8 small lumps of translucent dark blue/green raw glass (no. 26) used in trail decoration.

Less represented but most probably produced in the Southern Gate workshop are the thin-walled cups and beakers. Moil no. 41, with remarkably thin walls, may belong to one of these cups. Some of the thin-walled cups are in fact Iberian specificities and seem to be particularly well represented in *Lusitania* since the late first century AD which led Jennifer Price to propose a southern Iberia production (Price 1987). Their scarce presence amongst the Southern Gate assemblage can be partly explained by chronology because the end of fourth century is also the end of the line for these forms.

Also scarcely represented are the bowls with out-splayed tubular rims but, unlike thin-walled cups and beakers, they continue to be in use in the fifth century.

Black glass adornments (Fig. 269) are another glass item well represented amongst the Southern Gate glass waste, which leads us to propose a local production for them. Bracelets seem to be the main items produced but it may include as well some beads and pendants. In terms of decoration, bracelets could be plain, ribbed or impressed.

There are a few other glass vessels, poorly represented, which may possibly integrate the local production, like the tubular rimed bowls (nos. 142-144); the jars with out-turned fire-rounded rims (nos. 155-159) and the jugs with funnel mouth (nos. 165 and 166).

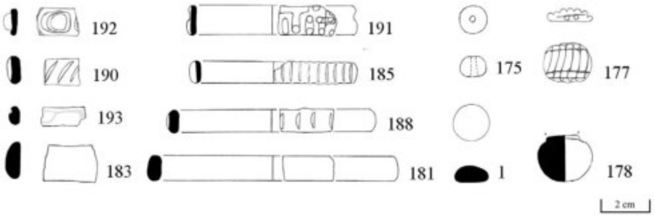

Fig. 269 Range of black glass adornments. Bracelets: plain (nos. 181, 183); vertical grooves (nos. 185, 188), diagonal grooves (no. 190), stamped (nos. 191, 192) with applied coloured trail (no. 193). Beads: spherical plain (no. 175), flat square (no. 177). Gemstone (no. 179). Spherical pendent (no. 178).

c Imports

For long time seen as a luxury item ancient glass is being proving having been in fact as accessible and multifaceted as pottery and metal. There are luxury glass vessels, rare and valuable, as there are common glass vessels, locally available and affordable. When we are dealing with glass finds from an archaeological site the rule seems to be: of the total number a vast majority is of local or regional production and just a minority is imported. There is of course one major restriction to this rule; it only applies to the periods and regions with attested local glass production. If it is not the case it is obvious that virtually all glass objects are imports. Another rule seems to be: common glass is probably of local production and luxury glass is probably imported. But this is a general rule driven more by intuition than by current knowledge because in reality we know little about glass production centres and glass trade. Traditionally, the Eastern Mediterranean regions (like Cyprus, Palestine and Egypt), Italy and the Rhineland are considered to be important glass production centres, exporting their fine glass vessels all over the Roman Empire, but more and more regions are revealing their fine glass productions. Let us not forget as well that secondary glass production has spread to the entire Roman Empire by master glassmakers, carrying with them to the remote workshops not only their tools but also their expertise and skills.

As far as the Southern Gate glass is concerned we can easily assume that the vast majority of the glass is of local/regional production, probably originated in the very same Southern Gate workshop or even in other local workshops, within *Ammaia* or in the neighbouring towns. There is virtually no example of which we can specify the exact origin but there are a few examples for which we can guess having been brought to *Ammaia* by long distance trade. As expected, the earlier glasses are the ones that are more easily identifiable as imports. This is definitely the case of the ribbon glass (no. 74) probably produced in the Egypt. As for the ribbed bowls (nos. 75-78) they could have been brought in from Italy or have already an Iberian origin.

The same incertitude concerning the origin applies to other presumably imported vessels. This is the case of the

Hofheim cup (no. 79), the convex bowl with facet-cutting (no. 110) and the convex cup with pinched combs (no. 111). The honey comb pattern of no. 110 suggests a link with *Asturica Augusta*, Astorga, Spain, where a concentration of glasses with the same decorative pattern had been found, suggesting the existence of a production centre (Cruz 2009: I, 238). The pinched combs of n. 111 is probably originated in northern Europe, even if an increasing number is being find in the Iberian Peninsula.

There are other cases for which we cannot advance an exact origin, even in the realm of hypotheses, because they can be either local production or importation. We have in this case the conical beaker with relief decoration (no. 81); the convex bowl with "rice-grain" facets (no. 109); the goblet with applied decoration (no. 138); the spherical jug (no. 160) and the bottles (nos. 161-163).

d Cast glass

Despite the invention of blown glass in the first half of first century BC, the first century BC and the first AD is in fact the period of apogee of cast glass. This old technique is responsible for some of the most beautiful Roman glass masterpieces amongst which stands polychrome mosaic glass as the famous *millefiori* pattern or as our rare fragment of ribbon glass no. 74, probably from a convex bowl like one found in Adria (Harden 1987: no. 16.). These mosaic glass vessels have eastern Mediterranean or Italian origins.

Unlike the ribbon glass, the ribbed bowl, type Isings 3, also known as pillar-moulded bowl, was very popular and widespread in the entire Roman Empire. This bowl is the most distinctive and representative Roman glass vessel of the first century BC/first century AD and is represented in *Ammaia*'s collection by four small fragments; two in a natural coloured bluish green tinge and two artificially coloured. The coloured ones are usually earlier than the blue/green ones. They probably have Italian origins, mainly the coloured ones, but an Iberian origin cannot be dismissed. Regardless their distinct features the ribbed bowls are diverse and have many variants (Foy 2010: 72) not yet closely establish or dated and not always possible to identify from small fragments.

e Blown glass

The invention of the blowing iron around the first half of first century BC triggered a technological revolution responsible for the huge success known by Roman glass since then. Gradually we see blown glass taking over cast glass and competing side by side with metalwork and pottery in Roman's daily life's (Carolis 2004). Most of these blown glass vessels are tableware like beakers, cups, bowls, plates and jugs, but we can also find storage containers like jars and bottles.

Strangely or not, unguent flasks are absent from this assemblage. This fact is in part explained by the type of site and by chronology. Small unguentaria are mainly found in Early Empire graveyards, which is not the case here.

"Hofheim cup"

The Hofheim cup, type Isings 12, is simultaneously one of the earliest and simplest blown vessels, besides being the most common in the first century contexts. They are easily recognisable by the vertical or slightly inturned rims, never out-turned, and by the horizontal bands of abrasion or the wheel-cut lines. Often called "Hofheim cups" after the Rhineland military site where the first examples were identified and typified (Price and Cottam 1998: 72), they appear in all western Roman provinces.

Thin-walled cups and beakers

The thin-walled cups and beakers with cracked-off rims are a group of drinking vessels very easy to recognize, exactly because of the thin walls, but difficult to tell apart the different forms and types from small rim and body fragments considering that they are mainly identified by their bases. The most commons in the Alentejo region are the beakers and cups with simple concave bases, footless or with tubular base ring, like the ones from *Ammaia* already published (Alarcão 1971: nos. 10, 11; Neves 1972: no. 8). Despite their thin walls they are usually decorated with wheel-cut or abraded lines like nos. 82-84.

All the examples can be of local or regional production, following a long tradition, probably originated in the first century AD (Price 1987: 33). The date range goes from the end of first century to fourth century but they are more common in the second/third centuries. Colourless and greenish colourless are the most common and blue-green are rare.

The beaker, or cup, no. 80, with separately blown foot does not have an exact parallel so far. The closest parallel is the conical beaker type Isings 21 but neither the shape of the body nor the shape of the foot is exactly the same. The wheel-cut decoration is also absent. It might well be a local production singularity. The fragment no. 81 is also very rare and might belong the base number 86 with double trail or to a conical beaker with separate blown foot and relief decoration like one from Cacabelos (Cruz 2009b: I, 75).

The beakers/cups nos. 83 to 85 are definitely of local production (Fig. 270) and have in common the wheel-cut lines and the applied base ring, made of a single and rather thin trail. Once again, there are no exact parallels to these beakers and the closest are the types Isings 109c, AR 72 or Trier 58, all with late chronology.

The fragment no. 88 belongs to a beaker with faceted base, usually hexagonal, and is another Iberian specificity. It might be of local production or from an Iberian Northwest production centre where many examples were found (Cruz 2009b: II, 93).

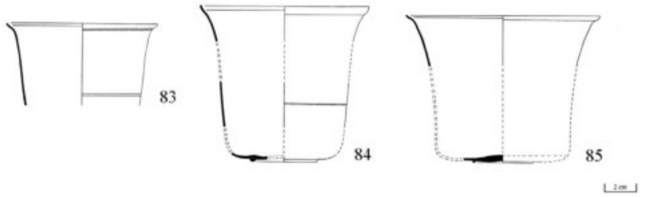

Fig. 270 Thin-walled cups with applied foot and wheel-cut lines.

Arched cups and bowls

This is one of the simplest, abundant and easily recognisable group of late Roman glass vessels. They have straightforward shapes resembling half glass bubbles, more or less elongated, with simple concave bases, like an indent, or no bases at all. The common characteristics are: the curved rims with S or C profiles, edge cracked-off usually left unworked. They resemble an inverted arch, hence the name given. Most of them are undecorated or have superficial horizontal bands of tooling marks, like simple scratching lines, maybe produced by jacks or shears in the last stage of the working process. It is neither abrasion nor wheal-cut lines as in the case of the thin-walled beakers (nos. 82, 83). Some have decoration formed when the vessel is hot, like applied trails or blobs and indents, others have decoration formed when the vessel was cold, like facet-cutting.

The rims with cracked-off edges and the absence of real bases suggest that they can be lamps and not tableware. The convex base make it difficult to stand steel on a flat surface and turn it more appropriated for hang up from oil chandlers. But there is another common feature that reinforces this suspicion: they all have a sort of outside frame on the rim suitable to fit on a metal ring. This might explain why the bowls with C profile rims have an applied trail and the bowls with S profile rims do not have it. In this way, trails could be considered a functional part of the vessel and not mere decoration.

Most of the plain examples from this group, if not all, are local production, as the examples 89 and 90, found with respective moils 209 and 207, definitely prove it. The decorated examples, like nos. 110 and 111, are probably imported but not necessarily from outside the Iberian Peninsula.

This family of arched vessels has several subtypes according to size, shape and decoration (see Fig. 268). In what size and shape is concerned, the rule seems to be: the smaller rim diameter the deepest the vessel is and vice versa. This observation is important because it allows us to identify and classify the subtypes from rim fragments. Deep conical and convex cups have rim diameters in between 80-120mm and correspond to type Isings 96a; bowls in between 120-150mm and shallow bowls in between 160-200mm correspond to type Isings 116. The more difficult to identify from rim fragments are the hemispherical bowls, considering that we need to know the height to real know if they are hemispherical. This variation in shape does not seem to be random but rather intentional since the different subtypes have different capacity and necessarily have different functions.

Cups nos. 89 to 94 and 112 to 115 are a deep version with a fairly conical shape, usually undecorated or with bands of tooling lines. Nos. 95, 116 and 117 are decorated with applied blue blobs. No. 95 has a pattern of a single big blob alternating with small blobs, presumably disposed in the form of a grape like type 1 from the Black See area (Sazanov 1995). However, this is definitely a local production as the similarity with the plain examples shows.

Cups nos. 96, 98 and 118 to 123 are still deep forms but with more convex/arched bodies, sometimes completely hemispherical as could have been the case of no. 98. This is type Isings 96a, AR 60 and Trier 49a, very common in the fourth century. No. 98 shows a chipped rim edge demonstrating that they were cold finished, sometimes very roughly.

Nos. 99 to 103 and 124 to 129 are real bowls identifiable by having a rim radius bigger than its height as we can confirm from no. 99, the only example to have a complete profile. No. 103 is the shallowest and biggest version, almost a plate.

From no. 104 to 108 we have a group of arched bowls with horizontal trails applied on the rim. These trails are usually self-coloured trails, like nos. 104 and 105, but this selection displays an unusual number of bowls with trails in a contrasting colour: no. 107 with a translucent dark blue trail and nos. 106 and 108 with opaque white trails. No. 105, with an S profile rim is an exception since they all tend to have C profile rims, sometimes with slight inturned edges. The usual shape of these bowls is hemispherical but no. 104 seems to have a rather unusual conical shape. There is no exact parallel outside the Iberian Peninsula but they are quite common in the centre and in the northwest.

Some of the earliest examples of arched bowls have facet-cutting decoration, ranging from simple “rice-grain” facets, like no. 109, to more elaborated and imbricate designs, like the honey-comb pattern shown by no. 110. These two examples do not belong to the local production but they can be from an Iberian centre, like Merida or Astorga.

Finally, no. 111 is a rare example of pinched decoration, resembling cockscomb, sometimes found together with simple pinched “nipples”. This is type AR61 and probably has it origin in central or northern Europe.

Beakers, cups and bowls with fire-rounded rim

Vessels with fire-rounded rims are scarcely represented in this collection. This can be in part explained by the complexity of the working technique, not as simple as the cracked-off rims, or by chronology: fire-rounded rims seem to be less common in the fourth century than in the third and fifth century, for example. As a matter of fact we have 3 cases from second/third century (nos. 138 to 140), one from fifth century (no. 141) and none from the fourth century, when the local glass workshop was operating.

No. 138 is probably a goblet or beaker with stem and foot Isings 86, AR99/100 decorated in snake-thread technique and probably from Rhineland origins. No. 139 looks like a cylindrical cup Isings 85, AR 98 and no. 140 a bowl with tubular base ring Isings 41 or 42.

No. 141 is definitely a shallow campanulate bowl with marvered white trails from the fifth century, the only example to clearly exceed the operation period of the Southern Gate glass workshop.

Tubular rimed bowls and plates

Bowls and plates with tubular rims are at the same time one of the most easily recognisable group of forms, because of the tubular rim, and one of the more difficult to date. They are long-lived forms with an early period of apogee in the second half of first century AD and second century, corresponding to type Isings 44/45, and a late period of apogee in the second half of fourth century, corresponding to type Isings 115. The vessels from these two periods do not diverge much in terms of shape and size but more in terms of bases and colours. Ours bowls no. 142, 143 and 149 belong probably to the late production, type Isings 115, because of their colours and archaeological context. No. 148 (not drawn) might belong to type Isings 44 or 45 from the first century.

No. 143 has a peculiar rim with a broad tube similar to the rim of a big winged bowl found in Mértola (Alarcão 1971: no. 8). No. 144 is a big bowl or plate, impossible to identify, probably from the late period because of the colour.

Nos. 145 to 147 and 150 to 152 are bowls with outsplayed tubular rim, type AR 109.2, probably from local production once they are very common locally and in the Iberian northwest (Cruz 2009b) and rare elsewhere. They pose similar problems in terms of chronology as the others tubular rimmed bowls but these examples are probably late examples.

Jars

Jars with out-turned fire-rounded rims poses the same dating problems as bowls with tubular rims, they are long-lived forms with quite variable body shapes and size. It is almost impossible to identify the different types and subtypes from simple rim fragments. Nevertheless, these jars are fairly common in the Iberian Peninsula (Cruz 2009b: II, 199) as in *Ammaia*'s collection and are most probably from local production.

Nos. 155, 156 and 159 are probably late forms, maybe from type Isings 131, because of their colour and rim inclination. Nos. 157 and 158 can belong to early jars like Isings 94 or 130.

Jugs and bottles

Square bottles for the transport and storage of liquids are one of the most common glass vessels in the first three centuries of our era, sometimes found in latter glass working contexts. Square bottles Isings 50 are for glass what amphorae are for pottery. They are very easily recognisable from small fragments, like folded rims, ribbon handles or the straight sides and bases, although they share the same type of rim and handles with the less common cylindrical bottles Isings 51. As for the hexagonal and rectangular bottles there is not a single example found in the Iberian Peninsula yet. Nos. 161 and 162 are two good examples of the typical folded rims, either with horizontal or diagonal profile. No. 163 is a base fragment with part of a mark showing a straight brunch.

From the third century onwards the funnel mouthed bottles and jugs take over the folded rims, either simple, like no. 165, or decorated with spiral trails above the rim. Unlike the square bottles it is difficult to identify the different types from small fragments, even from rim fragments.

No. 160 can be a bulbous jug decorated with thin self-coloured spiral trail like the one kept in the Elvas Museum (Alarcão 1968: no. 45).

e Glass adornments

Jewellery or simple adornments are some of the most misleading archaeological objects. Because of their size, beauty, endurance, value and emotional attachment they tend to be treasured or kept in use beyond fashion and the passage of time. It is very common to see Roman and pre-Roman glass beads in medieval sets of necklaces. This is also one of the reasons for the lack of specialized studies, mainly the ones dedicated to Roman glass adornments.

In the case of the Southern Gate assemblage we note a residuary number of coloured glass adornments, just 3 beads, and a relative abundance of black glass adornments, with 31 bracelets, 3 beads, 1 pendent and 1 possible gemstone. The rarity of coloured glass adornments can be explained by the fact that this is a habitat context and not a necropolis where these objects are usually found. The abundance of black glass adornments can be explained exactly by the presence of a glass workshop where these adornments where probably made and/or recycled.

Coloured glass adornments

Regardless the lack of studies on Roman glass adornments we notice that the early Roman adornments are mainly composed by beads, small sized and strong coloured, like the ones presented here. Their small size probably explains why they are so residual in this kind of settlements, because they can be easily lost and left behind, the same way as small coins are.

Black glass adornments

For long time mistaken with pre-Roman adornments, black glass adornments are gradually taking their place amongst late Roman glass where they actually belong. Our ignorance was more due to the lack of publishing than to a real absence from the archaeological sites. We just have to go through some glass collections in different archaeological museums to find black glass adornments in abundance, all around the Roman Empire. Just to mention national examples; *Conimbriga* (França 1969; Alarcão *et al*. 1976) and *Balsa* (Nolen 1994) have important collections. In the case of *Bracara Augusta*, besides its expressive collection we were able to identify evidences for black glass production in two of the three local workshops; one in Fujacal (Cruz 2008) and another one recently identified in the block of the former post office, called CTT (Cruz 2012). In Fujacal we could identify all sorts of evidences, from black raw glass and crucibles to waste glass. Having all this recent knowledge in mind and considering the amount of black glass among the Southern Gate assemblage it is not entirely unreasonable to propose a local production (see Fig. 269), even if we do not have direct proves as it was the case for *Bracara Augusta*.

For the moment we can just propose a broad chronology from the second half of the fourth to fifth century. In the case of Fujacal they seem to have been produced in the second half of the fourth century but in the case of CTT they appear in contexts of the end of the fifth century.

The so called "opaque black glass" is in fact neither completely opaque nor black but a very dark translucent coloured glass looking black and opaque because of a strong concentration of pigments. The most common ones are manganese oxide, used to obtain red and violet, and iron oxide for green. The colour is easily visible when we contrast thin chunks against the light. Usually the "red/violet black glass" is an early Roman glass and the "green black glass" a late Roman. All of our black glass adornments have a green tinge which is in line with the proposed chronology.

The value and esteem for black glass comes from the evidence that it is in fact "fake jet". This is by any doubt one of the first mass forgeries in History, even if the history of glass itself cannot be dissociated from the imitation of precious stones. Jet, and by extension black glass, is a material for long time seen as having magic properties, offering protection from the "evil eye" and other bad energies. In this sense they can be considered real amulets and not simple adornments.

Bracelets were by far the most popular black glass adornment, present in almost all archaeological late Roman contexts. In this way they can be considered as a good "fossil indicator" for this period. They have a characteristic orange wedge section, which helps us to distinguish them from the pre-Roman ones. They can be plain or decorated. The most common decorative technique is the impression of simple grooves, either vertical or oblique. These grooves are made freehand as we can see in examples 186 and 187, both showing grooves irregularly placed. Quite rare are the ones with more elaborated impressed motives (nos. 191 and 192), and the ones with strong coloured trails (no. 193). Some of the bracelets have such a small internal diameter that we can hardly count them as bracelets. They could either had been used by children or used as big beads or pendants in the composition of necklaces or other adornments. Because all of these bracelets tend to show wear patterns, like scratches, we can be sure that they were actually wear in daily life and were not just used for ritual or funerary purposes.

In popularity, after bracelets came the simple one-hole beads, like the two plain spherical ones (nos. 175 and 176) and the flat square two-holed beads (no. 177). These flat beads may just be used to compose segmented bracelets or elaborated necklaces sets. But this is just a hypothesis because no example has been found on a set yet. No. 178 is definitely a spherical pendent or amulet, with a broken hoop, probably representing a grape. No. 179 can be a fake gemstone for embedding on a ring or simply a small gamming counter.

f Reuse and reshape

Besides being largely recycled, the glass, as other materials, can be reused and sometimes reshaped. Recycling is basically processing used materials into new products. Reuse can be simply giving a new life or new use to an old vessel, like using a bottle made for storage as tableware or turning a goblet into a lump, but in some cases a broken vessel, or part of it, can be reshaped into a new object. As we see in pottery, fragments of broken glass vessels are often reshaped into roundels. Naturally the bases were more appropriate for this purpose because they have already the required round shape and could be easily adapted by the cutting and chipping of the remain wall.

These roundels are probably used as improvised gamming counters in board games or yard games, but in reality we do not know the exact function. Some of the roundels made out of bases with foot ring look like small dishes, when upside-down, like no. 201, and they could have been used for mixing unguents or paint. No. 202 is a fairly common reuse of the nipple-like base of a hanging lamp, Isings 106b.

V.7 AS MOEDAS

José Ruivo

a Introdução

O presente estudo[1] assenta na análise das 850 moedas do período romano recolhidas nas intervenções arqueológicas realizadas entre 1995 e 2006 no Fórum (40 ex.), nas Termas (49 ex.) e na Porta Sul (761 ex.) da cidade romana de *Ammaia*[2]. Deste conjunto, 819 exemplares correspondem a achados isolados (cf. Quadro 1) e 31 aos dois tesouros descobertos no torreão Oeste da Porta Sul (cf. Quadro 3).

	Forum	Termas	Porta Sul	Total
a. 27 a.C.		1		1
Sécs. I-II	6	4	47	57
Séc. III	8	7	116	131
Séc. IV	26	30	560	616
Indet.		7	7	14
Total	**40**	**49**	**730**	**819**

Quadro 1 Moedas do Fórum, das Termas e da Porta Sul,

Comparando o número de moedas recolhidas em cada uma das três áreas intervencionadas, constata-se que os achados da Porta Sul são muitíssimo mais abundantes que os do Fórum e os das Termas. Para essa diferença contribuirão a dimensão da área escavada - bastante superior na zona envolvente da Porta Sul - e a própria funcionalidade que teriam no período romano cada um dos três espaços, com o correspondente à Porta Sul a ser interpretado como espaço comercial (capítulos III.1-III.3). Considerando que uma moeda é tanto mais facilmente perdida quantas mais vezes muda de mãos, é natural que as zonas de comércio sejam propícias à perda de moedas. Um bom exemplo, embora vindo de um sítio com características ocupacionais distintas, é o da *villa* do Rabaçal (Penela), localizada no território de *Conimbriga*, onde a área urbana forneceu, tão só, 53 moedas do período romano contra as 90 da zona do balneário e as 215 da *pars rustica*, espaço onde se realizaria a maior parte das trocas (Pereira, Pessoa e Silva 2012: 138). A própria circunstância de um espaço apresentar um simples piso em terra, um pavimento revestido a "*cocciopesto*" ou um pavimento decorado a mosaico e o cuidado e a periodicidade das limpezas que estão subjacentes a cada um deles, influiria na recuperação de uma moeda. Há quase três décadas atrás, John Casey definiu vários princípios que, em seu entender, norteiam as perdas de moedas nos sítios. Assim, as perdas de moedas serão proporcionais: a) ao volume de moeda originalmente emitido; b) ao valor intrínseco das moedas emitidas; c) aos factores políticos e económicos dominantes durante o tempo de vida das moedas; d) ao tamanho físico de uma moeda no contexto das moedas existentes na circulação (Casey 1986: 69 ss.).

Deveremos ainda perguntarmo-nos se todas as moedas encontradas durante o trabalhos arqueológicos foram efectivamente perdidas. Tratando-se, regra geral, de moedas de baixíssimo valor intrínseco, fica-nos a dúvida: estamos, em muitos casos, perante uma perda acidental ou existiu uma intenção deliberada de as descartar? A questão coloca-se, sobretudo, no caso das peças dos séculos III e IV, cujo valor foi objecto de frequentes alterações no quadro de sucessivas reformas monetárias, algumas das quais incluiriam a desmonetização de determinadas denominações. Assim sucedeu, durante os século IV, com os *nummi* dos anos 318-348, com as *maiorinae* dos anos 348-350 e com os AE2 teodosianos (cf. Depeyrot 1996b: 6-10). Apesar de desconhecermos os efeitos práticos das disposições imperiais na circulação monetária provincial e de admitirmos prováveis incumprimentos normativos, julgamos perfeitamente possível o abandono de muitas destas moedas pelos seus possuidores, a sua retirada da circulação pelas autoridades locais ou pelo fisco ou, ainda, a sua rejeição pelos profissionais que procediam ao manuseamento do dinheiro (banqueiros, cambistas, etc.).

Um dos problemas com que nos deparámos no estudo deste material prende-se com a escassez de informação que temos ao nosso dispor relativamente à sua posição topográfica, estratigráfica e respectivos contextos. A ausência ou a mesmo a insuficiência destes elementos introduz, como é óbvio, uma importante limitação à presente investigação, uma vez que tende a direcionar-nos para um tratamento meramente estatístico das moedas em detrimento da sua inclusão em contextos de utilização susceptíveis de fornecerem alguma informação válida sobre a sua circulação efectiva.

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[1] Este trabalho foi realizado no âmbito de um protocolo de colaboração entre o Museu Monográfico de Conímbriga e a Fundação Cidade de *Ammaia*.

[2] Não fazem parte do presente estudo 12 moedas portuguesas igualmente recolhidas durante os trabalhos. Da Porta Sul provém: 1 dinheiro, 8 ceitis, uma moeda seiscentista e uma peça de V réis de D. Luís. As escavações do Fórum forneceram uma moeda setecentista ou oitocentista (V réis?).

O numerário reunido é vasto e abrange todo o período da ocupação romana, embora com particular destaque para o Baixo-Império, em particular para o século IV, ao qual pertencem três quartos das peças inventariadas. Um primeiro aspecto a salientar é a ausência de numerário isolado anterior à época augustana, se exceptuarmos o quinário de L. Papius Celsius proveniente das Termas (Cat. 41). Esta circunstância poderá vir ao encontro da tese avançada por Vasco Mantas, para quem *Ammaia* foi fundada de raiz algures entre Augusto e Cláudio (Mantas 2000: 396-397; Corsi e Vermeulen 2012: 6, 173-176; 2012b: 6; 2012d: 173-176). É um facto que o Tesouro 1 contém vários denários tardo-republicanos mas a sua deposição andará por finais do primeiro quartel do séc. II d.C. ou será, inclusivamente, posterior a essa data[3]. Atendendo a que não estamos perante um tesouro de aforro, aquele depósito é bastante elucidativo no que toca à circulação da prata republicana ainda ao tempo dos primeiros Antoninos.

b O período alto-imperial

De 27 a.C. a 68

Os mais de dois séculos correspondentes ao período alto-imperial estão representados por 58 numismas (48 bronzes e 10 denários), cerca de um terço dos quais se encontra de tal forma mal conservado que apenas foi genericamente atribuído a este período (cf. Quadro 2). Vinte e um exemplares atestam a sobrevivência das emissões júlio-claudianas durante um largo período de tempo. As peças mais antigas desta fase são de cunhagem provincial e foram batidas na vizinha *Emerita*: são elas um asse de Augusto e um dupôndio de Tibério. Apesar de exígua, a amostragem vem confirmar o que há muito se conhece sobre a preponderância do numerário lavrado na capital lusitana no território provincial, como sucede em *Conimbriga* (Bost, Hiernard e Pereira 1974: 203-212) ou na Estremadura portuguesa (Ruivo 1997: 121-123)[4]. Um terceiro exemplar de origem hispânico, deficientemente conservado, foi atribuído sem grande convicção a *Caesaraugusta*.

O grupo mais representativo de numerário alto-imperial proveniente de *Ammaia* é constituído por dez bronzes em nome de Cláudio I (todos os exemplares classificados com segurança são asses). Trata-se de moedas que, não obstante reproduzirem os tipos da *Moeda* de Roma, terão sido produzidas nas províncias ocidentais. O assunto é complexo e tem sido objecto de ampla discussão ao longo dos tempos, motivando a produção de uma vastíssima bibliografia (cf. Besombes e Barrandon 2000: 162 ss.).

A tese mais recente passa por propor a existência de diversos centros de cunhagem: a par de um atelier gaulês, na produção desta amoedação terão estado igualmente envolvidos dois centros emissores hispânicos: o *Atelier I*, localizado num acampamento militar (*Asturica Augusta*) e o *Atelier II*, situado eventualmente em *Tarraco* (Besombes e Barrandon 2000: 174-180). As produções do *Atelier I*, entre as quais se inclui a maior parte - se não a totalidade - dos exemplares identificados em *Ammaia*, ter-se-ão difundo maioritariamente pela parte Oeste da Península enquanto as produções do *Atelier II* predominam na área Este. A cunhagem deste numerário, que poderá ser classificado como oficial, teria decorrido entre 41 e 42 tendo como finalidade satisfazer as necessidades financeiras momentâneas do exército romano (Besombes e Barrandon 2000: 186). Parece-nos, contudo, que a sua profusão nos sítios arqueológicos peninsulares não referenda a finalidade apontada por P.-A. Besombes e J.-N. Barrandon e continuamos a subscrever a tese da sua cunhagem para obviar à penúria de moeda divisionária que se fez sentir após o encerramento da quase totalidade das casas da moeda hispânicas ainda antes do final do principado de Tibério e ao baixo volume produzido pela moeda de Roma entre 42 e 50. De resto, esta amoedação parece ter-se mantido em circulação durante um largo período de tempo[5]. Um exemplar amaiense exibe a contramarca neroniana NCAPR (Cat. 98), aposta possivelmente na sequência da reforma monetária de 64 que impôs o oricalco para todas as denominações de *aes* batidas em Roma e em Lyon[6]. A mesma contramarca parece ler-se, ainda que muito sumida, num outro bronze, atribuído genericamente ao período júlio-claudiano (Cat. 101). Também de cunhagem provincial, possivelmente de origem lionesa (Besombes, Barrandon e Martini. 2003-2004: 23-27), serão os dois asses em nome de M. Agrippa provenientes da Porta Sul (Cat. 92 e 93)[7].

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[3] Há notícia do achado de um outro tesouro com denários republicanos em *Ammaia*, mas a sua deposição dificilmente será anterior ao principado de Tibério (Gusmão 1876: 45-46).

[4] Para uma visão mais vasta, extensiva a toda a Hispânia, cf. Bost e Chaves 1990: 118-121 e Blázquez Cerrato 1992: 38-239.

[5] Sem ir mais longe, em *Conimbriga* admitiu-se a sua circulação até ao final da época flaviana ou aos primeiros anos do principado de Trajano (Bost e Pereira 1974: 173). Em Mérida, na Casa do Anfiteatro, num pequeno depósito de 16 bronzes terminando com um sestércio de Gordiano III, encontrou-se um asse em nome de Cláudio I com Minerva no reverso (Ruivo 2008: II, 27-29, nº 1).

[6] Besombes, Barrandon e Martini. 2003-2004: 162, n. 55. O desdobramento das abreviaturas poderá proporcionar, muito possivelmente, a seguinte leitura: N(*ero*) C(*aesar*) A(*gustus*) PR(*robabit*).

[7] Sobre as amoedações de Calígula, nomeadamente sobre os asses em nome de M. Agrippa, veja-se ainda o recente estudo realizado para o Norte da Hispânia e apresentado em 2010 ao *XIV Congreso Nacional de Numismatica* por Pérez González *et al.* 2011: 629-641.

	Emerita	**Caesaraugusta**	**Roma**	**C. Prov.**	**C. m. indet.**	**Total**
Augusto	1					1
Tibério	1					1
Augusto/Tibério		1				1
Gaio				2		2
Cláudio I				10		10
Júlio-Cláudios				6		6
68-69 (?)					1	1
Vitélio			1			1
Galba/Vespasiano			1			1
Vespasiano			6			6
Tito			1		1	2
Domiciano			1			1
Flávios			3			3
Nerva			2			2
Trajano			1			1
Adriano			3			3
Antonino Pio			3			3
Antoninos					1	1
Indeterminado					11	11
Total	**2**	**1**	**22**	**18**	**14**	**57**

Quadro 2 Moedas alto-imperiais da Porta Sul, do Fórum e das Termas.

Da morte de Nero a 96

O período que vai da morte de Nero até 96 está representado por 15 exemplares (cf. Quadro 2). A peculiaridade deste pequeno grupo de moedas prende-se com o facto de quase metade serem denários, ainda que um deles seja forrado, pelo que entra na categoria das falsificações (Cat. 106). Este incremento da circulação da prata é o reflexo do aumento substancial da cunhagem de moeda em metal precioso ao tempo dos Flávios, encontrando-se bem documentado noutras área peninsulares, nomeadamente em *Conimbriga* (Bost, Hiernard e Pereira 1974: 220-222), nos centros urbanos da área mediterrânica (Lledó Cardona 2004: 477) ou no Noroeste (Centeno 1987: 259-263).

O exemplar forrado acima referido é um híbrido anónimo que parece inspirar-se na amoedação produzida na Gália durante a Guerra Civil de 68-69: numa das faces exibe uma águia entre duas insígnias, tendo à sua direita um altar (tipo presente no reverso do denário RIC I 51). Na outra face observa-seuma coroa de carvalho (presente no reverso do denário RIC I 52).O peso actual deste exemplar (2,67 g) situa-se claramente abaixo do peso-médio do denário deste período (*c.* 3,36g: Duncan-Jones 1994: 225, tab. 15.5) circunstância que, apesar de habitual nas peças forradas, pode resultar do facto de a moeda amaiense se apresentar com aspecto bastante circulado. À semelhança dos exemplares que lhe serviram de protótipos, esta falsificação deverá ter origem gaulesa (Giard 1998: 7).

O contexto de agitação dos anos 68-69 está ainda representado por um denário do curto principado de Vitélio (Cat. 108). A este período ou aos anos subsequentes pertencerá um asse mal conservado que hesitámos em atribuir definitivamente a Galba ou a Vespasiano (Cat. 107).

Para o principado de Vespasiano foram contabilizados 6 exemplares: três denários, dois dupôndios e um asse (para Tito). Tito está presente com um denário (para Domiciano) e com um sestércio. Relativamente a este último exemplar (RIC II (1) 499) coloca-se a questão da localização da casa da moeda responsável pela sua emissão.Sabe-se que, para além de Roma, outro centro emissor lavrou bronze durante o reinado de Tito, mas o local exacto do seu estabelecimento permanece uma incógnita. Adjudicada inicialmente a Lyon, a sua produção foi depois atribuída à Bitínia (Giard 1998: 13, 240, nº 324) e, mais recentemente, a uma *Moeda* oriental, que se presume situada na Trácia (Carradice e Buttrey 2007: 193-194, 234). Para Domiciano contabilizou-se apenas um denário. Ainda no grupo do numerário flaviano há a registar a presença de três bronzes de atribuição incerta.

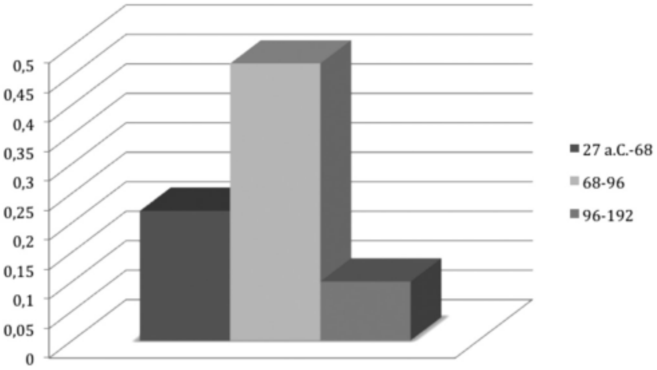

Fig. 271 Índice de moedas/ano em *Ammaia* durante o período alto-imperial.

Os Antoninos

Para o período compreendido entre 96 e 192 o número de moedas achadas isoladamente nas escavações do Fórum, das Termas e da Porta Sul não vai além da dezena. Trata-se de um número exíguo quando comparado com as 21 peças do período júlio-claudiano e com as 15 do período 68-96, mais ainda se atendermos a que a sua duração é quase idêntica à primeira daquelas fases. Uma imagem mais nítida é-nos fornecida pela comparação do índice das moedas/ano (cf. Fig. 271).

Fica bem patente a escassez de moedas do período antonino nos achados isolados amaienses. Pode dar-se como adquirida uma diminuição da massa monetária em circulação durante este período? Não cremos que tal tenha sucedido, por um lado porque os Tesouros 1 e 2, compostos por abundante numerário de Trajano (essencialmente denários e sestércios), contrariam esta visão pessimista e, por outro, porque os espécimes júlio-claudianos e flavianos assegurariam em boa medida as necessidades de moeda corrente indispensável à realização das trocas quotidianas. Tendo presente a natureza diminuta da nossa amostra e o risco de falta de representatividade que lhe está associado, poder-se-ia talvez colocar a ênfase na falta de renovação do numerário circulante que parece evidenciar. Outro aspecto pouco comum é a fraca representação do sestércio - apenas dois exemplares em dez, contrariando a sua habitual preponderância no quadro do numerário em *aes* do séc. II: vejam-se os casos de *Conimbriga*, onde as escavações luso-francesas forneceram um total de 30 sestércios para 23 asses e 6 dupôndios (Bost, Hiernard e Pereira 1974: 220-222), de *Baelo* (com 30 sestércios frente a 10 dupôndios, 24 asses e 6 asses/dupôndios: Bost e Chaves 1987: 62, tab. 27), de *Clunia* (99 sestércios contra 25 dupôndios e 61 asses: Gurt Esparraguera 1985: 89) ou da Tarraconense mediterânica (Lledó Cardona 2004: 491-493).

Seria este fraco, pelo menos aparentemente, aprovisionamento do sestércio compensado pelo denário? A percentagem de denários entre os achados isolados de *Ammaia* é anormalmente alta: 30 % das moedas são denários enquanto em *Conimbriga* a percentagem da moeda de prata se cifra nos 9,52 % (5 denários e 1 quinário, provenientes das escavações luso-francesas), em *Baelo* nos 7,89 % (Bost e Chaves 1987: 62, tab. 27), em *Clunia* nos 6,46 % (Gurt Esparraguera 1985: 89) e nas cidades portuárias da Tarraconense nos 6,16 % (Lledó Cardona 2004: 491). A confirmar-se esta suposição seria tentador ver aqui um indício de uma alta generalizada dos preços ou de uma subida do padrão de vida na *Ammaia* do século II, que obrigaria a uma circulação mais intensa da moeda prateada. E este dado ganha tanta mais importância quando nos damos conta que, pelo seu valor intrínseco e pelas suas características físicas, as moedas de prata não eram as que melhor se adequavam a serem perdidas e não recuperadas.

No entanto, os Tesouros 1 e 2, fechados por moedas de Trajano, vêem entrar na sua composição uma elevada percentagem de sestércios pós-flavianos (6 ex. de Trajano e 1 de Nerva no Tesouro 1 e 7 de Trajano no Tesouro 2) o que poderá constituir um indicador interessante sobre a sua presença na circulação monetária da cidade.

Ambos os depósitos foram descobertos no interior da Torre Oeste (cf. observações no capítulo III.1) da Porta Sul em 1996 (Tesouro 1) e 2001 (Tesouro 2) no decurso de intervenções levadas a cabo, respectivamente, pelos arqueólogos Isabel Cristina Fernandes e Sérgio Pereira. Não obstante a publicação dos achados ter sido efectuada de forma bastante meritória por Sérgio Pereira (Pereira 2002: 99-134), gostaríamos, contudo, de retomar algumas das sua reflexões. Os dois pequenos conjuntos monetários foram descobertos no interior da Torre Oeste, a cerca de 2,40m de distância um do outro, praticamente à mesma cota, oscilando entre os 0,25m (tesouro 1) e os 0,34m (tesouro 2) abaixo do nível de circulação à época da ocultação (528.94m). Ambos se encontravam encostados à parede do torreão, próximos da entrada, por baixo de orifícios de colocação de andaimes, elementos que poderiam ter funcionado como pontos de referência para a sua recuperação[8]. Os conjuntos descobertos nestas condições devem ser inseridos naquela categoria a que Jean-Pierre Callu chamou “esconderijos monetários múltiplos” (Callu 1979: 5-16). A sua ocultação será com frequência obra de um único indivíduo, com os dados conhecidos sobre o seu posicionamento a irem desde um vago encontrados “em conjunto” até a “alguns metros de distância”. No caso do tesouro duplo de Collone (Jura), os achados encontravam-se a cerca de um metro de distância um do outro (Estiot 1998: 107), no de Magny-Cours (Nièvre), a distância entre eles rondava a dezena de metros (Estiot, Drost e Nicot 2013: 48).

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[8] Neste ponto temos algumas dúvidas de que os conjuntos pudessem ter sido ocultados no momento da construção da torre, como sugeriu Sérgio Pereira (2002: 112 e 2009: 71).

Tesouro 1	AR	Hs	Total
República	3		3
Vitélio	1		1
Vespasiano	1	2	3
Tito		1	1
Domiciano		1	1
Nerva		1	1
Trajano	3	5	8
Indeterm.	3		3
Total	11	10	21

Tesouro 2	Hs	Dp	As	Total
Júlios-Cláudios			1	1
Domiciano	1			1
Trajano	7	1		8
Total	8	1	1	10

Quadro 3 Composição dos tesouros da Porta Sul.

Atendendo à composição dos dois achados amaienses, um deles misto, com denários e sestércios, e outro composto apena por moeda de bronze (cf. Quadro 3) e à significativa diferença de valor entre ambos (o equivalente a 54 sestércios para o Tesouro 1 e a 8 sestércios e 3/4 para o Tesouro 2) concordamos em absoluto com Sérgio Pereira no sentido de o Tesouro 1 representar um modesto aforro e o Tesouro 2 constituir um pequeno “porta-moedas” para obviar às necessidades do quotidiano (Pereira 2002: 110).

No Tesouro 1, o aspecto que mais salta à vista é a presença de 11 denários que, cronologicamente, se estendem do período tardo-republicano até Trajano, na medida em que representam 4/5 do valor do aforro. O metal precioso amoedado constitui uma das formas mais práticas e eficazes de acumular valor e a sua presença neste pequeno depósito parece confirmar o que acima escrevemos a propósito da moeda de prata quando tratámos dos achados isolados, na medida em que este grau de frequência parece sinalizar uma presença relevante na massa monetária circulante.

Digna de nota é também a presença no depósito de 3 denários tardo-republicanos (1 para *Caesar* e 2 unidades da série legionária de *M. Antonius*), circunstância que atesta a sua circulação ainda no início da época antonina. O baixo teor de fino dos denários legionários de Marco António levou a que se mantivessem em circulação durante largo tempo, numa clara manifestação da Lei de Gresham. Enquanto os denários de boa prata eram entesourados ou fundidos, estes permaneceram nos circuitos durante gerações, ao ponto de Plínio-o-Velho, um século depois da sua cunhagem, referir a sua abundância nos quatro cantos do mundo romano (Harl 1996: 60). A presença deste numerário é conhecida em tesouros da época antonina do Noroeste peninsular, concretamente nos de Montes de Albar, Pontevedra (Centeno 1987: 67, nº 57) e Vilarnovo, A Coruña (Centeno 1987: 85-86, nº 84).

Destacamos ainda a importância dos sestércios na composição dos dois achados. Atendendo a que ambos os conjuntos terão sido constituídos por peças subtraídas ao giro praticamente no momento da sua formação, a presença do sestércio seria uma realidade na circulação monetária amaiense que a exiguidade dos achados isolados não deixa transparecer. O facto de nos depósitos amaienses, num conjunto tão modesto de moedas, encontrarmos três sestércios idênticos - do tipo RIC 604 (1 ex. no Tesouro 1 e 2 ex. no Tesouro 2) - faz-nos suspeitar de que possa não se tratar de uma coincidência. Fariam estas moedas parte de um abastecimento recém-chegado à cidade?

Não vemos outro motivo para a não recuperação deste depósitos senão o desaparecimento súbito do seu proprietário, possivelmente alguém relacionado com a guarda da porta, função que lhe terá proporcionado as condições propícias para aí ocultar os seu modesto pecúlio.

A deposição dos dois conjuntos deverá datar do final do principado de Trajano, o mais tardar de inícios do de Adriano.

c O século III

O período que vai da morte de Cómodo (192) ao final da primeira tetrarquia (305) forneceu 131 moedas, isto é, 16% do total das moedas avulsas recolhidas nas intervenções do Fórum, das Termas e da Porta Sul (cf. Quadro 4). Destacam-se as emissões dos anos 260-294, com o numerário do Império Central, o numerário do Império das Gálias e as imitações da série *Divo Claudio* a totalizarem 88,56% da amoedação do século III.

AD 193-260

Os cinco sestércios contabilizados até 260 sinalizam uma tímida renovação da massa monetária circulante na primeira metade do século III, composta em boa medida pelo numerário cunhado antes de 192 (Bost *et al.* 1992: 112) e mostram a preponderância do bronze, em particular do sestércio, sobre os restantes metais na circulação corrente, factos que são comuns às províncias romanas da parte mais

	Lond	Lyon	M. I	M. II	Rom	Mil	Tic	Kar	Ciz	Ant	Ale	Irreg	Ind	Total	%
193-260															3,82
Septímio Severo					1									1	
Gordiano III					1									1	
Filipe I					1									1	
Treboniano Galo					1									1	
Valeriano					1									1	
260-294															79,39
Galieno					21									21	
Cláudio II					25					1				26	
Quintilo					2	1								3	
Divo Claudio												41	7	48	
Aureliano					1				2					3	
Probo					1		1							2	
Maximiano		1												1	
Vitorino			3											3	9,16
Tétrico I			6	1								2		9	
294-305															6,87
Diocleciano					1						1			2	
Maximiano					1			2						3	
Constâncio Cloro	1				1			1						3	
Diocl./Maxim.								1						1	
Imperador ind.													1	1	0,76
Total	**1**	**1**	**9**	**1**	**58**	**1**	**1**	**4**	**2**	**1**	**1**	**43**	**8**	**131**	**100**

Quadro 4 Moedas do século III do Fórum, das Termas e da Porta Sul.

	Lyon	Mint I	Mint II	Roma	Milão	Tic	Cíz	Ant	Irreg.	Indet.	Total	%
Galieno				21							21	18,1
Cláudio II				25				1			26	22,41
Quintilo				2	1						3	2,59
Divo Claudio									41	7	48	41,38
Aureliano				1			2				3	2,59
Probo				1		1					2	1,72
Maximiano	1										1	0,86
Vitorino		3									3	2,59
Tétrico I		6	1						2		9	7,76
Total	**1**	**9**	**1**	**50**	**1**	**1**	**2**	**1**	**43**	**7**	**116**	**100**

Quadro 5 Moedas do período 260-294 do Fórum, das Termas e da Porta Sul.

ocidental do Império, nomeadamente à Lusitânia (Ruivo 2008: I 276-279). Ainda para este período, é de notar a para já absoluta ausência da prata, cunhada sob a forma de denários até 240 e, a partir de 238, sob a de antoninianos com um teor de fino abaixo das 500 milésimas.

AD 260-294

À semelhança do verificado na generalidade dos sítios, também em *Ammaia* a esmagadora maioria das moedas perdidas do século III foi lavrada entre 260 e 294[9]. Ao todo foram recenseadas 116 unidades, qualquer coisa como 88,55% das 131 moedas do século III. No essencial, podemos reduzir esta amoedação a quatro grandes grupos: 1) as séries em nome de Galieno; 2) as séries em nome de Cláudio II e Quintilo; 3) as séries póstumas de Cláudio II (*Divo Claudio*); 4) as séries dos imperadores gauleses (cf. Quadro 5).

O numerário em nome de Galieno é composto por 21 antoninianos provenientes de Roma, quase todos batidos nas 5ª (9 ex.) e 6ª séries (7 ex.) datadas, respectivamente, de 266 e 267-268 (cf. Quadro 4). Para Cláudio II e Quintilo contabilizámos 29 radiados, 27 dos quais lavrados na casa da moeda central. Milão e Antioquia contribuiram com um exemplar cada uma. Do ponto de vista quantitativo, as séries de consagração de Cláudio II, com 48 unidades, destacam-se claramente durante este período (41,38% das moedas dos anos 260-294). Destas, pelos menos 41 serão imitações produzidas à revelia da autoridade imperial. Quanto às restantes 7 numismas, admitimos que possam ser de cunhagem oficial, produzidas na casa da moeda da capital, mas no que respeita a esta amoedação a distinção entre exemplares oficiais e imitações torna-se por vezes bastante difícil pela subjectividade que encerra, não sendo possível garantir a cem por cento o seu carácter genuíno.

Ainda com alguma expressão durante esta fase, representando mais de dez por cento do numerário dos anos 260-294, temos uma dúzia de exemplares dos usurpadores gauleses Vitorino (3 ex.) e Tétrico I (9 ex.), batidos na quase totalidade numa *Mint I*, estabelecida possivelmente em Trier. Ainda neste grupo há a considerar a presença de duas imitações de Tétrico I.

Esta abundante massa monetária é composta quase exclusivamente pelos antoninianos desvalorizados dos anos 260-274, lavrados em quantidades ingentes pelo Estado romano, num período de grave crise das finanças públicas e de rotura dos stocks de metais preciosos. A moeda radiada, que aquando da sua criação por Caracala possuía um teor de fino de cerca de 500‰, vê esse teor cair para cerca de 100‰ em 260 e baixar, entre 266 e 270, para uns meros 20-25‰ (Cope *et al.* 1997: 75-78, 99-100, tab. 12-13).

Este fenómeno de massificação do antoniniano na circulação é ainda amplificado pela injecção dos *Divo Claudio* no giro. Esta amoedação, inicialmente batida pelas casas da moeda oficiais ao tempo de Quintilo ou Aureliano (cf. uma breve discussão desta problemática em Ruivo 2008: I 192-193), foi posteriormente objecto de imitações massivas na parte ocidental do Império, onde acabou por se transformar num fenómeno endémico. Tanto no caso de *Ammaia* como no da maior parte dos sítios do ocidente romano os *Divo Claudio* de imitação acabam por constituir a maior fatia das moedas perdidas durante o século III (Ruivo 2008: I 293-296), sinalizando, segundo julgamos, um fenómeno de abandono/rejeição desta amoedação pelos utilizadores uma vez ultrapassadas as circunstâncias que terão estado na génese da sua produção, o que só deverá ter ocorrido a partir de finais do século III-inícios do IV, sobretudo com a renovação dos *stocks* monetários a partir da reforma tetrárquica de 294, associada à desmontetização e desvalorização das espécies antigas. Todavia, a saída dos *Divo Claudio* da circulação nunca foi completa, existindo inclusivamente indícios de uma presença significativa na massa monetária circulante ainda na segunda metade do século IV, conforme parecem testemunhar os dados fornecidos pelos achados isolados (Bost, Hiernard e Pereira 1974: 242-243; Depeyrot 1999: 47-49, 59-62).

O número de moedas perdidas lavradas entre a reforma de Aureliano e a reforma tetrárquica de 294 é extraordinariamente baixo. Ao todo, 5 *aureliani*, dois em nome de Aureliano, outros tantos para Probo e um para Maximiano, aos quais há que acrescentar um denário lavrado em Roma antes do início do último trimestre de 275. A estabilização do teor de fino (50‰) e a fixação do valor da nova moeda radiada cunhada, de resto, em quantidades modestas quando comparada com os radiados sucessivamente desvalorizados dos anos 260-274, provocaram a sua imediata retirada de circulação pelos aforradores, obrigando à manutenção na circulação dos espécimes desvalorizados anteriores a 274. Daí que não surpreenda a escassez dos *aureliani* nas províncias ocidentais, nomeadamente na Lusitânia (cf. Ruivo 2008: I 274, Quadro 92, 302-304; Reece 1973: tab. IVB).

AD 294-305

O numerário da reforma monetária levada a cabo por Diocleciano em 294 está representado em *Ammaia* por nove numis mas, quase o dobro dos *aureliani* dos anos 274-294, sinalisando uma melhoria no aprovisionamento e na renovação da massa monetária circulante, à semelhança do que

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[9] Se pretendermos ser mais precisos e descontarmos as parcas moedas lavradas após a reforma de Aureliano de 274 (apenas 4 exemplares no caso de*Ammaia*), teremos que balizar esta abundante amoedação entre 260 e 274.

Casa da Moeda	305-330	330-348	348-361	361-395	Séc. IV	Total
Amiens			1			1
Londres	3					3
Lyon	3	7	7	7		24
Trier	5	10	1	2		18
Arles	4	36	34	14		88
Óstia	2					2
Aquileia	4	2	2	5		13
Roma	10	45	34	8		97
Ticino	2					2
Síscia	2	1	2	4		9
Sírmio			2			2
Tessalonica	1		8	3		12
Heracleia		3	1	1		5
Constantinopla		12	10			22
Cízico		9	14			23
Nicomédia	1	9	5	1		16
Antioquia		3	2	3		8
Alexandria		2	1			3
Moedas irregulares		8	12	7		27
C. m. indeterminada	4	72	80	52	33	241
Total	**41**	**219**	**216**	**107**	**33**	**616**

Quadro 6 Moedas do século IV do Fórum, das Termas e da Porta Sul.

acontece em diversos centros urbanos e rurais lusitanos[10]. Com 8 unidades inventariadas, predominam os *neoantoniniani*, designação dada às pequenas fracções radiadas de bilhão, fisicamente muito semelhantes ao antoniniano e ao aureliano, com os quais de resto se corresponderiam, estabelecendo a ponte entre as antigas denominações radiadas e as novas espécies da reforma tetrárquica (Callu e Yvon 1966: 303-320), facto que estará na origem do seu sucesso nas províncias hispânicas, nomeadamente nos sítios lusitanos, não fugindo *Ammaia* à regra (Ruivo 2008: I 253-254, 304-307). A ampla divulgação desta pequena moeda radiada na circulação corrente contrasta com a escassez do *nummus*, uma grande moeda de bilhão, cujo peso se aproximava ao do asse augustano (*c.* 10g), com um teor de fino a rondar os 40‰. Tratando-se de uma moeda criada para desempenhar um papel importante na circulação, tal não veio a suceder - e o facto de se ter unicamente recolhido um exemplar batido em *Londinium* (Londres) *c.* 297 para Constâncio Cloro (Cat. 246) é exemplificativo - em boa medida por força do interesse que parece ter despertado nos aforradores, que a elegeram como moeda preferencial para a constituição das suas poupanças subtraindo-a, assim, aos circuitos e remetendo para o giro as moedas de menor valor nominal e intrínseco, neste caso os neoantoninianos (Callu 1969: 393-394).

d O século IV

As escavações efectuadas nas áreas do Fórum, das Termas e da Porta Sul forneceram 616 moedas do século IV (615 bronzes e 1 *solidus*), qualquer coisa como três quartos de todas as moedas recuperadas durante os trabalhos arqueológicos (Quadro 6).

Este elevado número de moedas perdidas reflecte os abundantes volumes de moeda de bronze cunhados e lançados na circulação durante o século IV deixando vislumbrar, mais do que uma conjuntura de prosperidade, um contexto de perturbação económica. Tenha-se ainda presente que, não obstante a cunhagem desta amoedação se situar no século IV, a sua perda/abandono definitivo se terá alargado pelo menos ao século V, uma vez que a partir de 395 o abastecimento de moeda ao ocidente hispânico cessa praticamente.

Como se pode observar pelo Quadro 7 optámos por dividir o século IV em quatro períodos: 1) 305-330, 2) 330-348, 3) 348-364, 4) 364-395. Em termos quantitativos, os períodos 330-348 e 348-364 são, de longe, os que contam com maior número de moedas perdidas, o primeiro com 219 exemplares (37,56 %), logo seguido do segundo com 216 exemplares (37,05 %). Muito distantes encontram-se o período 364-395, com 107 numismas (18,35 %) e, sobretudo, o período 305-330, com uns modestos 41 exemplares (7,03 %).

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[10] Uma avaliação da evolução da circulação deste período nas cidades lusitanas de *Emerita*, *Balsa*, *Mirobriga* e *Conimbriga* ou nas *villae* de Torre de Palma e Cerro da Vila, entre outras, foi já efectuada no nosso projecto de doutoramento (Ruivo 2008: I 273, quadro 291 e 308-312, quadro 116 e gráfico 63).

Períodos	Nº ex.	%	Moedas/ano
305-330	41	7,03	1,64
330-348	219	37,56	12,17
348-364	216	37,05	13,5
364-402	107	18,35	2,82

Quadro 7 Distribuição, por períodos, das moedas do século[11].

No início do século IV prossegue a ténue revitalização da massa monetária circulante iniciada após a reforma monetária de Diocleciano sendo, portanto, previsível que parte das necessidades de numerário fossem ainda supridas pelos *antoniniani* e *aureliani* das últimas quatro décadas do século III (Bost, Hiernard and Pereira 1974: 259; Bost e Chaves 1987: 83; Ripollès 2002: 210). É nestas circunstâncias que mais se faz sentir a ausência dos contextos, fundamentais para percebermos a duração de vida das espécies monetárias.

AD 305-330

As primeiras décadas do século IV fazem-se representar por 41 *nummi*, a maior parte dos quais lavrada entre a reforma de 318 e 330 (cf. Quadro 8). Entre 305 e 330 assistiu-se a uma rápida desvalorização da moeda de bilhão introduzida por Diocleciano. Talhada inicialmente a 1/32 a libra(peso padrão de cerca de 10 g) e com um teor de fino a rondar os 40‰, a nova moeda atingirá 330 com um talhe de 1/96 a libra (peso padrão de 3,41g) e um teor de fino de cerca de 20‰. Não obstante estas alterações ponderais sugerirem um aumento do volume da moeda cunhada, o número de peças recolhido nos sítios acaba por ser modesto e *Ammaia* não é excepção.

Cerca de dois terços das 37 moedas em que foi possível identificar a legenda do anverso ostentam o nome de membros da casa de Constantino, com o imperador à cabeça (19 ex.) acompanhado dos Césares seus filhos: Constantino II (6 ex.), Crispo (3 ex.) e Constâncio II (1 exemplar). Da amoedação dos seus rivais, Maxêncio, Maximiano e Licínio, contabilizaram-se, respectivamente, 2, 1 e 5 *nummi*.

Neste período, o numerário amaiense é na quase totalidade oriundo das casas da moeda ocidentais (cf. Quadro 8), predominantemente italianas e gaulesas, se bem que há aqui a considerar duas fases distintas: entre 305 e 318, a amoedação é exclusivamente de origem gaulesa e italiana; a partir de 318, mantém-se o domínio das cecas italianas e gaulesas mas encontramos já numerário de origem balcânica e oriental. Na globalidade, os 10 exemplares da *Moeda* romana colocam-na à cabeça, bem destacada, seguida de Trier (5 ex.), de Arles e Aquileia (ambas com 4 ex.) enquanto Londres e Lyon somam 3 unidades cada. Em traços gerais, este panorama pouco ou nada diverge do quadro traçado para *Conimbriga* (Bost, Hiernard e Pereira 1974: 250-251, fig. 6), nem dos resultados obtidos para *Baelo*, onde a divergência mais notória passa pelo claro domínio das emissões de Arles sobre o restante numerário ocidental (Bost e Chaves 1987: 84, tab. 43).

AD 330-348

O período 330-348, dominado pela amoedação de Constantino e dos filhos é para já, em termos quantitativos, o que mais moedas forneceu em *Ammaia*. Os 219 *nummi* contabilizados correspondem a 37,56 % das 583 moedas devidamente identificadas para o século IV[12], superando por escassíssima margem o numerário dos anos 348-364, que se cifra nos 37,05 %. Todavia, se nos abstivermos do volume em termos abstractos, e afinarmos a nossa análise por um critério mais objectivo, como o das moedas/ano, obtemos uma nítida inversão das hierarquias, com um índice de 12,17 moedas/ano para o período 330-348 contra um índice de 13,5 moedas/ano para o período seguinte (cf. Quadro 7).

Dentro deste período há a considerar três fases cronológicas relevantes:

1) 330-335: caracterizada pela redução ponderal do *nummus* (talhado a 1/132 a libra), e pela introdução dos tipos *Gloria Exercitus* (2 estandartes), *Constantinopolis* e *Urbs Roma*. Para esta fase lográmos identificar 32 numismas, correspondentes a 15,31 % do total do período (cf. Quadro 9)[13];

2) 335-340: redução do talhe do *nummus* para 1/192 a libra, com a manutenção dos tipos monetários da fase anterior (mas o *Gloria Exercitus* passa a exibir apenas um estandarte) acrescidos, entre 337 e 340, de alguns tipos secundários. Mais de metade das moedas recolhidas para os anos 330-348, num total de 109 unidades (52,15 %), foi cunhada durante esta fase;

3) 341/7-348: introdução de novos tipos monetários, as *Victoriae Dd Auggq Nn* nas cecas ocidentais e os *Vota* e outros

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[11] Na elaboração deste quadro não foram contabilizadas as 33 moedas atribuídas genericamente ao século IV e referidas no Quadro 6.

[12] Não foram consideradas neste cálculo 33 moedas não datadas, genericamente atribuídas ao século IV.

[13] O cálculo das percentagens foi realizado a partir de 209 unidades, uma vez que não se contabilizaram 8 imitações e 2 moedas com reversos não identificados.

	Lond	Lyon	Tr	Arl	Ost	Aq	Rom	Tic	Sis	Tes	Nic	Ind	Total
305-318													
Maximiano						1							1
Maxêncio					2								2
Constantino I	1	1		2			5						9
Licínio I							3						3
Constantino II			2										2
Total 1	1	1	2	2	2	1	8						17
318-330													
Constantino I	1		2				2	2	1		1	1	10
Licínio I				1		1							2
Constantino II		1				1			1	1			4
Crispo	1			1		1							3
Constâncio II			1										1
Imperador ind.		1										3	4
Total 2	2	2	3	2		3	2	2	2	1	1	4	24
Total 1 + 2	**3**	**3**	**5**	**4**	**2**	**4**	**10**	**2**	**2**	**1**	**1**	**4**	**41**

Quadro 8 Moedas dos anos 305-330 em *Ammaia*.

	Lyon	Trier	Arl	Aq	Rom	Sis	Her	Const	Ciz	Nic	Ant	Ale	Ind	Total
330-335	2	1	3	2	12			3	2	2			5	32
335-340	2	4	19		28	1	3	8	5	5	2	1	31	109
341-348	3	5	14		5			1	2	2	1	1	34	68
330-348													2	2
Total	**7**	**10**	**36**	**2**	**45**	**1**	**3**	**12**	**9**	**9**	**3**	**2**	**72**	**211**

Quadro 9 Distribuição das moedas dos anos 330-348.

tipos subsidiários no Oriente[14]. Os trabalhos arqueológicos permitiram recuperar 68 *nummi* desta fase (32,54%), cerca um terço das moedas consideradas para os anos 330-348.

No Quadro 9 e, sobretudo, na Fig. 272, pode observar-se em simultâneo a distribuição das moedas dos anos 330-348 pelas três fases suprarreferidas e a sua atribuição aos respectivos centros emissores[15]. O numerário dos anos 330-335 é relativamente modesto, sendo sobretudo oriundo de cecas gaulesas e italianas, cabendo a Roma a primazia entre elas. Esta tendência prevalecerá durante os anos 335-340, com o abastecimento de bronze à cidade a ser dominado pelo numerário de Roma e Arles, ao mesmo tempo que se constata um claro crescimento da amoedação emitida pelas cecas orientais, entre as quais se destaca, de forma muito nítida, Constantinopla. Nos anos 341-348, a importância das emissões orientais face às ocidentais volta a decair, o mesmo acontecendo ao numerário romano que é claramente suplantado pelas emissões gaulesas, particularmente pelas arlesianas. *Ammaia* parece mostrar aqui um perfil de abastecimento algo diferente do que encontramos em *Conimbriga*, onde a circulação dos anos 330-348 é, de forma geral, dominada pelo numerário gaulês (Bost, Hiernard e Pereira 1974: 250-251, fig. 6) e assemelha-se bastante ao de uma pequena cidade portuária como *Baelo*, igualmente dominada pelas séries de Roma entre 330 e 341 (Bost e Chaves 1987: 86-87, tav. 45).

Neste curto espaço de tempo as moedas de bronze exibiram nos seus reversos uma iconografia variada, através da qual o poder fez passar a sua mensagem propagandística, com o propósito de enaltecer os diversos membro da casa reinante (as Augustas incluídas), comemorar a fundação de Constantinopla - e, em simultâneo, reforçar o papel central de Roma como centro tradicional do Império - ou glorificar a título póstumo a figura divinizada de Constantino I.

De entre a dúzia de reversos distintos identificados em *Ammaia* destacam-se em termos quantitativos os *Gloria*

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[14] A cronologia destas emissões tem sido alvo de discussão ao longo do tempo: cf., a título de exemplo, os trabalhos de Kent 1981; Callu 1986: 186-198; Depeyrot 1996b: 6, 77-80 e Gricourt 1998: 127-139.

[15] Não se consideraram, obviamente, as 70 numismas que não puderam ser atribuídas a qualquer centro emissor, nem as moedas de imitação.

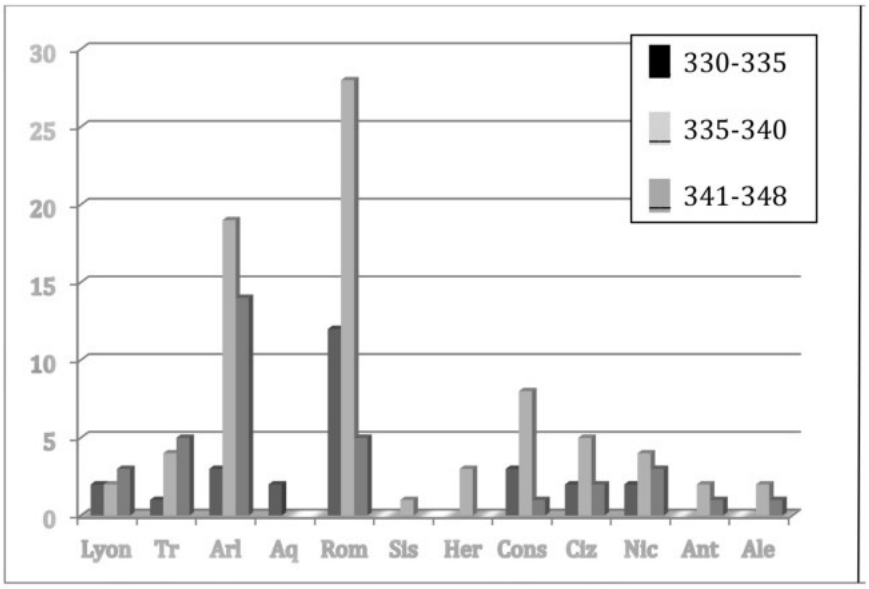

Fig. 272 Distribuição por fases e por centros emissores das moedas dos anos 330-348 (nº ex).

Tipos	**Nº moedas**	**%**
Gloria Exercitus (2 estdts)	21	9,95
Gloria Exercitus (1 estdt)	71	33,65
Urbs Roma	13	6,16
Constantinopolis	21	9,95
Quadriga	6	2,84
Securitas Reip	5	2,37
Virtus Augusti	2	0,95
Pax Publica	1	0,47
Pietas Romana	1	0,47
Victoriae Dd Auggq Nn	51	24,17
Vot XX Mult XXX	13	6,16
Vn Mr	5	2,37
Iust Ven Mem	1	0,47
Total	**211**	**100**

Quadro 10 Reversos das moedas dos anos 330-348.

Exercitus (1 e 2 estandartes), as *Victoriae Dd Auggq Nn*, as séries urbanas, e os *Vota* de Constante e Constâncio II (cf. Quadro 10), deixando algumas indicações sobre a sua importância no seio das emissões da época.

AD 348-364

Como já tivemos oportunidade de referir, abundam as moedas deste período entre os achados isolados amaienses. Ao todo foram inventariadas 216 numismas, 35,06 % do numerário do séc. IV objecto do presente estudo (cf. Quadros 6 e 11).

À semelhança do que fizemos com as moedas dos anos 330-348, também aqui optámos por repartir o numerário deste período por 3 fases:

1) 348-353: esta fase caracterizou-se pela reforma da moeda de bronze protagonizada em 348 por Constante e Constâncio II. Ostentando como denominador comum reversos com a legenda propagandística *Fel Temp Reparatio*,

	Am	**Lyon**	**Trier**	**Arl**	**Aq**	**Rom**	**Sis**	**Sir**	**Tes**	**Her**	**Cons**	**Ciz**	**Nic**	**Ant**	**Ale**	**Irr**	**Ind**	**Total**
348-353	1	2	1	8		2	1		1							4	6	26
353-358		5		23	2	30	1	2	5	1	10	14	5	2	1	8	66	175
358-364				3		2			2								8	15
Total	**1**	**7**	**1**	**34**	**2**	**34**	**2**	**2**	**8**	**1**	**10**	**14**	**5**	**2**	**1**	**12**	**80**	**216**

Quadro 11 Distribuição das moedas dos anos 348-364.

	Amiens	**Lyon**	**Trier**	**Arles**	**Roma**	**Siscia**	**Tes**	**Indet**	**Total**
Constante			1			1		2	4
Constâncio II				6			1	2	9
Magnêncio	1	2		2	2			2	9
Total	**1**	**2**	**1**	**8**	**2**	**1**	**1**	**6**	**22**

Quadro 12 Moedas dos anos 348-353 por imperadores e casas da moeda.

foram introduzidas 3 novas denominações: um *Aes* 2 de grande módulo, batido a 1/60 a libra (peso teórico de 5,45g), associando àquela legenda os tipos da *Galera* e do *Cavaleiro derrubado* (a *maiorina* das fontes clássicas); um *Aes* 2 de pequeno módulo, lavrado a 1/72 a libra (peso teórico de 4,54g), com os tipos da *Cabana* e dos *Dois cativos* e, finalmente, foi criada uma terceira denominação, presentemente designada por *Aes 3*, cunhada a 1/120 a libra (peso teórico de 2,72g), exibindo nos reversos os tipos da *Fénix* e da *Galera*. Durante a usurpação de Magnêncio (350-353) foram introduzidos novos tipos monetários e as várias intervenções no *Aes* 2 grande acabaram por fixá-lo em 1/72 a libra. Esta fase está representada em *Ammaia* por umas modestas 22 peças de cunhagem oficial (cf. Quadro 11), apenas 10,78 % das moedas dos anos 348-364. A maior parte são *Aes* 2 (16 *Aes* 2 contra 6 *Aes* 3). Globalmente predominam os exemplares em nome de Constâncio II e Constante (13 ex., essencialmente *Aes* 2 e *Aes* 3 da *Galera*), com curta vantagem sobre os de Magnêncio e do seu César Decêncio (9 ex., na quase totalidade *Aes* 2 do tipo *Victoriae Dd Nn Aug et Caes*)[16]. Contabilizaram-se ainda 4 moedas imitando protótipos desta fase.

As moedas analisadas foram todas cunhadas em casas da moeda ocidentais (cf. Quadro 12) predominando, tal como para os anos 341-348, o numerário das cecas gaulesas, com Arles a ocupar um lugar de proeminência, à semelhança do que ocorre em *Conimbriga* (Bost, Hiernard e Pereira 1974: 267 ss.).

A escassa circulação deste numerário justifica-se pela apetência que despertou nos aforradores e pela rápida desmonetização das moedas de Magnêncio, possivelmente interditadas em 354 (*Cod.Theod.,* IX 23.1: cf. Kent 1981: 65).

2) 353-358: a *maiorina* foi retirada de circulação e cunhou-se exclusivamente o *Aes* 3, a 1/120 a libra, com o tipo *Fel Temp Reparatio* (*Cavaleiro derrubado*). Durante esta fase os ateliers imperiais lavraram moeda de bronze em proporções colossais, não surpreendendo a abundância desta amoedação em *Ammaia*, onde é responsável por 30,02 % do numerário do século IV e por 21,37 % das 819 moedas da época romana inventariadas para o sítio no presente estudo[17]. Situação semelhante verifica-se na maior parte dos sítios hispânicos desta época, encontrando-se inclusive cifras ainda mais elevadas em *Baelo Claudia*, onde aproximadamente um terço das moedas do século IV são *Aes* 3 *Fel Temp Reparatio* (Bost e Chaves 1987: 88-89) ou em *Conimbriga*, onde se atingem os 35,77 % (Bost, Hiernard e Pereira 1974: 278).

Entre as 101 numismas cuja casa da moeda foi identificada, é nítido o predomínio dos centros emissores ocidentais, particularmente os gauleses de Lyon e Arles (cf. Fig. 273) e os italianos (Roma e Aquileia, pese a escassa importância do numerário desta última ceca)[18]. Roma volta a ocupar o lugar cimeiro, seguida a pouca distância por Arles. Assiste-se nesta fase ao eclipse das produções de Trier, cuja última emissão de *Fel Temp Reparatio* ocorre em 355 (Kent 1981: 137). Também pouco significativa é a participação das casas da moeda balcânicas (Síscia, *Sírmio* e Tessalonica). Pelo contrário, assiste-se a um significativo aumento da amoedação oriunda dos ateliers orientais, com Cízico e Constantinopla à cabeça, que se cifra nuns consideráveis 32,67 % das moedas dos anos 353-358. Este retrato não difere significativamente do que já foi captado há quatro décadas para *Conimbriga* (Bost, Hiernard e Pereira1974: 280).

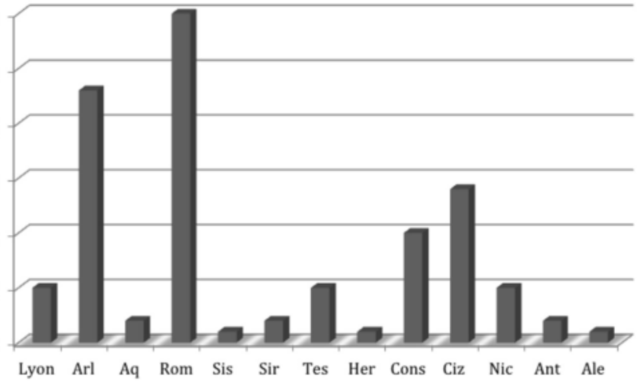

Fig. 273 Distribuição do numerário dos anos 353-358 por casas da moeda (nº ex.).

3) 358-364: em 358 entrou em circulação uma pequena moeda de bronze com o reverso *Spes Reipublice*. Batida provavelmente a 1/144 a libra (Kent 1981: 64)[19] e com um peso teórico a rondar os 2,25 g (*Aes* 4), destinava-se a substituir os *Fel Temp Reparatio*. Os 15 exemplares recuperados até ao momento em *Ammaia* indiciam um peso bastante modesto deste numerário na circulação monetária da cidade, situação que é, de resto, comum à generalidade dos sítios hispânicos (Bost, Hiernard e Pereira 1974: 280-282; Bost e Chaves 1987: 89).

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[16] Em *Conimbriga*, o numerário dos usurpadores ultrapassa largamente o dos imperadores legítimos, cifrando-se em mais de 50% do numerário dos anos 348-353 presente no sítio (Bost, Hiernard e Pereira 1974: 268 ss.).

[17] Apesar de nesta análise termos englobado todos os *Aes* 3 *Fel Temp Reparatio* do cavaleiro derrubado no período 353-358, no catálogo optámos por manter as cronologias propostas por J. P. C. Kent (1981) que, no essencial, divide a emissão desta série em duas fases: uma primeira com emissões em nome de Constâncio II e de Constâncio Galo (353-354/5) e uma segunda como emissões em nome de Constâncio II e de Juliano (355-361).

[18] Foram descontadas as moedas cuja casa da moeda não foi identificada (66 ex.) e as imitações (8 ex.).

[19] Outros autores, como Pierre Bastien (1985b: 96) e Georges Depeyrot (1992: 67) propõem um talhe a 1/156 a libra, para um peso teórico de 2,09 g, valor que mais se aproxima ao peso real das moedas desta série.

	Lyon	Trier	Arles	Aq	Rom	Sis	Tes	Her	Nic	Ant	Ind	Total
364-378												
Solidus		1										1
AE3					2		1				3	6
378-387												
AE 2	7	1	11	5	6	4	2		1	1	26	64
AE 4			2								3	5
387-402												
AE 2								1		2	1	4
AE 4			1									1
Total	**7**	**2**	**14**	**5**	**8**	**4**	**3**	**1**	**1**	**3**	**31**	**81**

Quadro 13 Moedas dos anos 364-402.

AD 364-395

Para os anos 364-395 contabilizaram-se 107 moedas, que representam apenas 18,35% das moedas do século IV recolhidas até ao momento no sítio. Das 13,5 moedas/ano para o período 348-364 recua-se para as 2,82 moedas/ano no último terço do século IV. Depois do pico alcançado na emissão do bronze entre 353 e 358, assiste-se a uma redução das quantidades de bronze amoedado, acabando os *Fel Temp Reparatio* de Constâncio II por constituir a base da massa monetária circulante na segunda metade do século IV.

Para facilitar a análise subdividimos este período em 3 fases:

1) 364-378: Valente e Valentiniano I retomaram a cunhagem do *Aes* 3 (a 1/132 a libra, com um peso teórico de *c.* 2,47g) mas, após as curtas emissões de início do reinado (não obstante o seu volume ser considerável), assistiu-se a uma rápida redução ou suspensão das mesmas, que afectou praticamente todas as casas da moeda imperiais (Depeyrot 1992: 79). Neste contexto, não surpreende que apenas se tenham recenseado para esta fase 6 magros bronzes, maioritariamente em nome de Valente, repartidos pelos tipos *Securitas Reipublicae* (4 ex.) e *Gloria Romanorum* (2 ex.).

Mais interessante é o aparecimento, em condições de jazida que ignoramos, de um *solidus* produzido em Trier para Graciano pouco depois da reforma de Março de 368 (Cat. 670), num momento em que, após décadas de crescimento do volume de ouro amoedado, se iniciou um processo muito lento de redução do *stock* e das cunhagens do metal amarelo, numa proporção de 0,5 a 0,8% ao ano (Depeyrot 1992: 75-76). Não obstante, a inflação galopante, o cansaço e a desconfiança do público relativamente às manipulações levadas a cabo pelo Estado com a moeda de bronze, reforçarão a participação do ouro nas trocas durante a segunda metade do século IV, facto que os achados monetários parecem sufragar, sobretudo a partir de finais do século IV e inícios do V (Bost, Campo e Gurt 1992: 79-81, tab. 4, 88, fig. 5)[20].

2) 378-387: esta fase é marcada pelo aparecimento de um grande bronze talhado a 1/60 a libra (peso teórico de 5,45g) e de um pequeno submúltiplo, talhado a 1/192 a libra (peso teórico de 1,70 g), que as casas da moeda ocidentais produziram sobretudo sob a forma dos *Aes* 2 *Reparatio Reipub* e dos *Aes* 4 com os *Vota* de Graciano. Introduzidas possivelmente em 381 (LRBC 1978 43; Bastien 1987: 56; Depeyrot 1992: 79) estas denominações ocuparão um lugar de relevo na circulação monetária amaiense, correspondendo, no estado actual da investigação, ao último abastecimento relevante de numerário à cidade (cf. Quadro 13).

Consideradas as 81 moedas usadas na elaboração da tabela[21], constata-se que 69 foram produzidas durante esta fase, isto é, 85,19% de todos os achados dos anos 364-402! A esmagadora maioria deste numerário é constituída por *Aes* 2 da série *Reparatio Reipub* ostentando as titulaturas dos imperadores legítimos Graciano (24 ex.), Valentiniano II (8 ex.) e Teodósio (11 ex.), mas também a do usurpador Magno Máximo (9 ex.). Contabilizaram-se ainda 13 moedas desta série com legendas de anverso ilegíveis ou truncadas, nas quais não foi possível ler o nome do imperador responsável pela emissão. Ainda neste grupo, há a registar o achado de dois *Aes* 2 com reverso *Victoria Augg*, batidos no final da usurpação de Máximo, presumivelmente à volta de 386, e de um *Aes* 2 da série *Gloria Romanorum* (*Galera*) - cuja cunhagem se inicia em 381 no Oriente e nas cecas balcânicas, em simultâneo com os *Reparatio Reipub* - em nome de Valentiniano II. Os pequenos *Vota* de Graciano cingem-se a cinco unidades. As escavações não forneceram qualquer *Aes* 3[22].

Durante esta fase o abastecimento de numerário a *Ammaia* é da inteira responsabilidade das casas da moeda ocidentais, particularmente das cecas gaulesas, a quem são atribuíveis mais de metade das peças correctamente identificadas (cf. Fig. 274). O destaque vai uma vez mais para as emissões arlesianas (13 ex.), bem acompanhadas pelas séries lionesas (7 exemplares). Em termos globais, as casas da moeda italianas surgem ainda relativamente bem representadas, mas as séries romanas não voltarão a conhecer a divulgação de períodos anteriores. Durante esta curta fase o peso da amoedação produzida no Oriente é completamente despiciendo. De um modo geral, este quadro apresenta várias semelhanças com o traçado para *Conimbriga*, pese embora o facto de, nesta cidade, o numerário oriental, composto essencialmente por *Aes* 4, desempenhar um papel mais relevante (Bost, Hiernard e Pereira 1974: 293).

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[20] Existe ainda uma notícia vaga de Frei Amador Arrais acerca da descoberta de moedas de ouro em S. Salvador da Aramenha anteriormente a 1846, sem que se possa precisar a cronologia do achado ou achados (Cortez 1953: 504).

[21] Para o período 364-402 foram inventariadas 107 numismas. Na elaboração do quadro não se consideraram, todavia, 7 imitações e 19 unidades não atribuídas especificamente a qualquer uma das três fases consideradas.

[22] Também em Conímbriga predominam largamente os Aes 2, seguidos dos Aes 4, com os Aes 3 a não irem além de uns insignificantes 0,53% (Bost, Hiernard e Pereira 1974: 290).

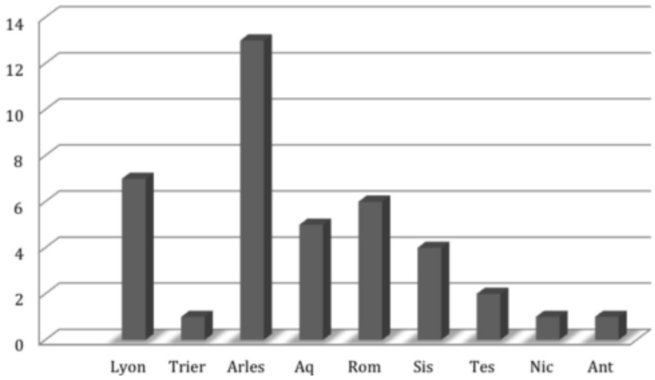

Fig. 274 Distribuição do numerário dos anos 378-387 por casas da moeda.

3) 387-402: este período caracteriza-se pelo ocaso das cunhagens da *maiorina*. No Ocidente o seu fabrico terminou com a morte de Magno Máximo (388), mantendo-se apenas no Oriente com a série *Gloria Romanorum* (*Lábaro*). Em 12 de Abril de 395 o governo do Ocidente ordenou a desmonetização do *decargyrus nummus* (*Cod.Theod.* IX, 23.2: cf. Kent 1994: 18), designação que tem sido associada ao *Aes* 2. Embora os *Aes* 2 orientais sejam relativamente abundantes em vários sítios e em numerosos tesouros hispânicos de finais do século IV- inícios do V, o seu papel na massa monetária circulante de *Ammaia* parece insignificante, cingindo-se presentemente a 4 unidades, que representam tão só 4,93%. das 81 moedas bem datadas do período 364-402[23].

O numerário das casas das moeda ocidentais, constituído pelos *Aes* 4 *Salus Reipublicae* e *Victoria Auggg*, com uma circulação relativamente bem documentada nos sítios hispânicos[24], parece não ter chegado igualmente a *Ammaia* em grandes quantidades, a julgar pelo facto de se ter identificado unicamente uma *Victoria Auggg* de Arles (Cat. 685). É certo que os dados poderiam ser algo diferentes se pelo menos algumas das oito moedas recolhidas - frustes ou totalmente ilegíveis - com módulo de *Aes* 4 tivessem sido identificadas e atribuídas com segurança a esta fase, o mesmo sucedendo com 4 *minimi* deficientemente conservados, mas estamos em crer que, mesmo que tal sucedesse, pouco influiriam na visão geral sobre a circulação monetária na cidade nesta fase final da dominação romana.

A partir de 395 a cunhagem do bronze reduz-se drasticamente no Ocidente, tendo sido emitidas apenas pequenas quantidades de *Aes* 4 nos centros emissores gauleses, que suspenderão a produção a partir de 402, não obstante terem sido ocasionalmente reactivados nas décadas seguintes. As casas da moeda italianas manterão uma actividade mais regular, mas as suas produções só esporadicamente chegarão às províncias hispânicas. Para já, em *Ammaia*, o silêncio é total.

As imitações

Propositadamente, deixámos para o final a análise das moedas de imitação do século IV recolhidas nas escavações. Trata-se de um numerário que, apesar de ter atingido um carácter reconhecidamente epidémico durante essa época, suscita diversas interrogações, nomeadamente relacionadas com os centros de produção, com a sua cronologia e com a finalidade subjacente à sua emissão[25]. Em *Ammaia* foram 27 as moedas identificadas como de cunhagem irregular, conforme se observa no Quadro 14.

Desde logo salta à vista a modesta percentagem alcançada pelas imitações quando comparadas com as peças de fabrico regular, não obstante em muitos sítios hispânicos se atingirem valores inferiores a um por cento[26]. Tratando-se

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[23] Em *Baelo* os *Aes* 2 *Gloria Romanorum* representam 16,39% das moedas dos anos 364-402/8, valor que sobe para 21,04% em *Conimbriga* e para 24% na *villa* de S. Cucufate (Vidigueira).Quanto aos tesouros, e só para citar alguns exemplos de depósitos provenientes de áreas geográficas circundantes, em Torrecaños (Badajoz), os *Aes* 2 dos anos 393-395 representam 43,38% das 1390 moedas oficiais do achado (Sienes Hernando 2000: 45-46, nº 33), no depósito de Santa Vitória do Ameixial (Estremoz), essa cifra sobe até aos 45,39% das 3321 peças regulares inventariadas (Sienes Hernando 2000: 46-47, nº 34), no depósito de Tróia IV (Grândola), os *Aes* 2 de 393-395 atingem 46,67% das 1502 moedas consideradas (Sienes Hernando 2000: 47-48, nº 36) e, no conjunto de Garciaz (Cáceres), este numerário ronda praticamente os 50% das 1535 unidades devidamente identificadas (Sienes Hernando 2000: 44, nº 30).

[24] Em *Conimbriga*, entre as 272 moedas dos anos 388-402/8, recensearam-se 66 *Salus Reipublicae* e 34 *Victoriae Auggg* (Bost, Hiernard e Pereira 1974: 187), e em *Baelo*, listaram-se 17 peças destas duas séries entre 28 moedas da mesma fase (Bost e Chaves 1987: 178-180).

[25] A bibliografia sobre o tema é extensíssima. Uma síntese bastante elucidativa sobre a problemática envolvida foi elaborada por Pierre Bastien (1985a: 143-175). Para uma visão pormenorizada sobre as imitações do século IV na Península Ibérica, a obra de referência é a de Milagros Sienes Hernando (2000: 89-162).

[26] A este propósito, consultem-se as tabelas publicadas por Sienes Hernando (2000: 95 ss.). Atente-se, todavia, no facto de a detecção de uma imitação ter, com alguma frequência,um carácter subjectivo, variando de investigador para investigador. Assim, salvo nos casos em que foi a própria numismata espanhola a examinar directamente as moedas - aplicando a todas o mesmo critério - as percentagens apresentadas tem carácter meramente indicativo.

Período	Oficiais	Imitações	Total	%
330-348	211	8	219	3,65
368-364	204	12	216	5,55
364-402	100	7	117	6,54

Quadro 14 Moedas de imitação do século IV em *Ammaia*.

	Lyon	Trier	Arles	Cons	Indet	Total
330-348						
Gloria Exercitus (2 estds.)	1					1
Gloria Exercitus (1 estd.)	1				4	5
Urbs Roma	1					1
Victoriae Dd Auggq Nn		1				1
348-364						
Fel Tem Reparatio (Galera)			1		1	2
Victoriae Dd Nn Aug et Cae(s)			1		1	2
Fel Temp Reparatio (*FH3*)			3	1	4	8
364-402						
Reparatio Reipub			3		3	6
Victoria Augg	1					1
Total	**4**	**1**	**8**	**1**	**13**	**27**

Quadro 15 Tipos de reverso das imitações do século IV em *Ammaia*.

de um fenómeno que atingiu principalmente a parte ocidental do Império, é nas províncias britânicas e gaulesas, tradicionalmente consideradas o berço desta amoedação, que a moeda de imitação constitui parte significativa da massa monetária circulante. Apenas a título exemplificativo, ocorre-nos citar os casos de Tolouse onde, para o período compreendido entre 330 e 363, as imitações oscilam entre os cerca de 30 e os 59% (Geneviève 2000: 63-67) ou em Saint-Bertrand-de-Comminges, onde o valor médio das imitações se situa nos 39,16% de todas as moedas do século IV (Bost e Namin 2002: 49)[27].

A menor percentagem de imitações corresponde aos anos 330-348, com as 8 moedas identificadas a representarem 3,65% das 219 moedas desse período. O tipo mais copiado é o *Gloria Exercitus* (1 estandarte), com 5 exemplares[28], seguido dos tipos *Gloria Exercitus* (2 estandartes), *Urbs Roma* e *Victoriae Dd Auggq Nn*, todos com uma unidade (cf. Quadro 15). De um modo geral o peso destas moedas é bastante inferior ao dos protótipos, à excepção de uma *Gloria Exercitus* (1 estandarte), cujos 2,22g se situam bem acima do peso padrão dos *nummi* dos anos 335-340: *c.* 1,70g. Aliás, as restantes quatro *Gloria Exercitus*, foram classificadas como *minimi* (módulo igual ou inferior a 12mm), com as três peças com 1 estandarte a apresentarem pesos entre os 0,54 e os 0,56g e a moeda com os 2 estandartes a não ir além dos 0,49g.

A cronologia de produção deste numerário, particularmente do que usa como protótipos as séries oficiais dos anos 330-340, é, desde há muito, objecto de acesa discussão[29]. Será contemporâneo dos protótipos ou imediatamente posterior mas sem ultrapassar 348 - podendo inclusivamente não atingir essa data - como defende, entre outros, Pierre Bastien (1985a: 167-168), ou ter-se-á estendido para lá de 353, nos termos da proposta de J.-P. Callu e J.-P. Garnier (1977: 289-294)? Sem querer tomar posição, parece-nos aceitável que as moedas de melhor peso e módulo tenham sido produzidas ao mesmo tempo que os seus protótipos ou pouco depois, com os *minimi* a serem cunhados mais tarde, eventualmente já depois de 348.

No período 348-364 assistimos a um pequeno aumento da percentagem das imitações face ao período anterior: de 3,65% passamos para 5,55%, com 12 exemplares inventariados. Uma das moedas copia a maiorina com o reverso *Fel Temp Reparatio* (Galera), produzida na sequência da reforma de 348. Segundo Pierre Bastien (1985b: 152) estas imitações são bem conhecidas na Gália, na Britânia, nas províncias danubianas e no Egipto. Na Península Ibérica, a julgar pelos achados isolados, a sua difusão parece ter sido reduzida, o que não surpreende se considerarmos que a circulação dos seus protótipos foi, também aqui, limitada (Sienes Hernando 2000: 107-108). Com um peso de 3,41g, o exemplar de *Ammaia* fica longe do peso-médio de 4,45g obtido para cinco moedas oficiais recolhidas nas escavações e a grande distancia do peso padrão de 5,45g. É possível que uma segunda moeda com o mesmo reverso, mas de módulo e peso reduzidos (2,38g), copie o *Aes* 3 talhado a 1/120 a libra (*c.* 2,72g).

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[27] No caso da *Britannia*, e para uma visão de conjunto sobre a problemática da extraordinária difusão das imitações do século IV no seu território, cf. o estudo de George C. Boon (1988: 135-145).

[28] No levantamento efectuado por Sienes Hernando, a partir das moedas de vários sítios peninsulares, as imitações do tipo *Gloria Exercitus* (1 estandarte), são as mais abundantes entre as que copiam protótipos dos anos 330-348, correspondendo a mais de 38% das peças identificadas (Sienes Hernando 2000: 106).

[29] Veja-se, a este propósito, um resumo das várias posições sobre o assunto em Sienes Hernando (2000: 105).

Tomando como modelo o reverso *Victoriae Dd Nn Aug et Cae(s)* de Magnêncio observaram-se duas imitações, uma com módulo de *Aes* 2 e peso de 3,29g e outra de diâmetro (*Aes* 3) e peso (1,80g) mais reduzidos, reproduzindo possivelmente as semi-maiorinas lavradas em Trier e em Lyon para o usurpador.

Bem presentes em *Ammaia* estão as imitações do *Aes* 3 *Fel Temp Reparatio* (Cavaleiro derrubado) dos anos 353-358, à semelhança do verificado em numerosos sítios hispânicos. Entre os oito exemplares contabilizados há pelo menos dois a merecer destaque: o primeiro ostenta a marca *- -//* SCONS[...], característica das emissões de Arles dos anos 330-340 (Cat. 762); o segundo reproduz a marca de um *Aes* 2 de Constantinopla (•S• *//[...]), mas o módulo e o peso (1,57g) são próprios de um *Aes* 3 (Cat. 768). Embora nos inclinemos a ver aqui uma peça de fabrico irregular, admitimos a possibilidade de a moeda ser oficial, só que cunhada num *flan* mais pequeno.

Em termos metrológicos, seis destas moedas apresentam módulos e pesos bastante abaixo da média (1,29g), entrando as restantes duas na categoria dos *minimi* (0,43g e 0,76g).

A circulação deste numerário está documentada nas províncias danubianas, na Ásia Menor e no Egipto, é comum na Hispânia (Sienes Hernando 2000: 117-120) e extraordinariamente abundante na Gália e na Britânia (Bastien 1985a: 155, 170-171), mas as razões para a sua produção massiva e a cronologia que lhe está associada não foram ainda apuradas de forma inequívoca. É possível que na sua génese esteja o ambiente conflituoso vivido na Gália logo nos inícios da segunda metade do século IV, na sequência das invasões germânicas (Callu e Garnier 1977: 295), ambiente esse que poderá ter provocado um corte no abastecimento e consequente situação de penúria da moeda de bronze, obrigando à cunhagem destas *moedas de necessidade*. Quanto à duração do fenómeno, Pierre Bastien situa o termo destas emissões em 358, com o arranque da circulação dos *Aes* 4 *Spes Reipublice*, mas admite que o seu fabrico se tenha prolongado para lá desta data nas regiões mais afectadas pela falta de moeda de bronze (Bastien 1985a: 171).

Ao período 364-402 corresponde o último grupo de imitações detectadas em *Ammaia*, com sete exemplares que representam 6,54 % das 117 moedas inventariadas para esta fase, valor muito próximo dos 5,85 % e dos 6,07 % obtidos por Milagros Sienes Hernando (2000: 131-132) respectivamente para os achados isolados e para os tesouros hispânicos. As moedas amaienses copiam essencialmente os *Aes* 2 *Reparatio Reipub*, abarcando seis dos sete exemplares contabilizados: quatro com a titulatura de Graciano, um com a de Valentiniano II e outro com a de Magno Máximo. O sétimo exemplar copia os *Aes* 2 *Victoria Augg* lavrados em Lyon para Máximo com a particularidade de associar àquela legenda a iconografia própria dos *Reparatio Reipub*: Imperador, com globo nicéforo, erguendo mulher ajoelhada (Cat. 759). Esta ocorrência não é inédita: Sienes Hernando (2000: 136) havia já denunciado a presença de moedas com as mesmas características nos tesouros hispânicos de Tróia III (1 ex.), Santa Vitória do Ameixial (2 ex.) e Torrecaños (3 ex.).

A abundância de *Reparatio Reipub* de imitação com o nome de Graciano leva a pensar que a produção deste numerário terá ocorrido sobretudo entre 381, data de arranque da cunhagem dos protótipos, e 383, data da morte do Imperador, devendo continuar a partir daí em menor escala, uma vez que a percentagem das imitações com o nome de Máximo, cuja amoedação oficial apenas se iniciou em 383, é relativamente baixa. De qualquer modo, a existência de moedas irregulares da série *Victoria Augg*, batida em 386, é reveladora de que esta onda de imitações se prolongou praticamente até ao final do reinado de Máximo (Sienes Hernando 2000: 135-136).

A origem gaulesa da esmagadora maioria das imitações do século IV encontradas em *Ammaia* é posta em evidência-pelo facto de estas moedas copiarem essencialmente protótipos de Arles, Lyon e Trier (cf. *supra* Quadro 14), circunstância à qual não serão alheias a proximidade geográfica e os contactos comerciais com as províncias gaulesas, sendo previsível a exportação desta amoedação conjuntamente com as peças oficiais.

e Conclusão

Que conclusões, ainda que de carácter provisório, se podem retirar da análise do material numismático fornecido pelas escavações do Fórum, das Termas e da Porta Sul de *Ammaia*?

Seguindo a linha de pensamento exposta por John Casey (1986: 115), é necessário estarmos cientes de que não é possível presumir a riqueza de uma sociedade nem o grau de desenvolvimento da sua actividade económica a partir das moedas de baixo valor (vulgo “trocos”) que ficaram imobilizadas no registo arqueológico, para mais quando sabemos de antemão que, nos negócios importantes, seriam outros os meios de pagamento utilizados, nomeadamente o ouro e a prata (amoedados ou sob outras formas), do mesmo modo que hoje se recorre aos cheques ou às transferências bancárias para as grandes transações.

Considerando ainda que a área escavada é relativamente diminuta quando comparada com a área total da cidade e que as funcionalidades e a cronologia dos espaços podem desempenhar um papel determinante nas quantidades e no tipo de material recolhido, as pequenas denominações utilizadas na vida quotidiana do cidadão comum e recolhidas nas escavações dão-nos apenas um vislumbre do que poderá ter sido a realidade monetária da *Ammaia* romana.

Conscientes destes constrangimentos, limitar-nos-emos a algumas observações finais relativas à circulação da moeda na cidade. Para tal, e para auxiliar a nossa exposição, sistematizámos a informação relativa às 819 moedas isoladas anteriormente analisadas num gráfico construído na base do critério das moedas perdidas por mil (cf. Fig. 275)[30].

Até inícios da segunda metade do século III a alimentação de moeda a *Ammaia* parece relativamente modesta, destacando-se apenas, ainda que ligeiramente a época flaviana. A circulação da prata parece ter sido importante, a julgar pela percentagem de denários perdidos durante os Flávios e os Antoninos. Os pequenos depósitos da Porta Sul sugerem uma injecção de moeda na circulação no final do principado de Trajano-inícios do de Adriano.

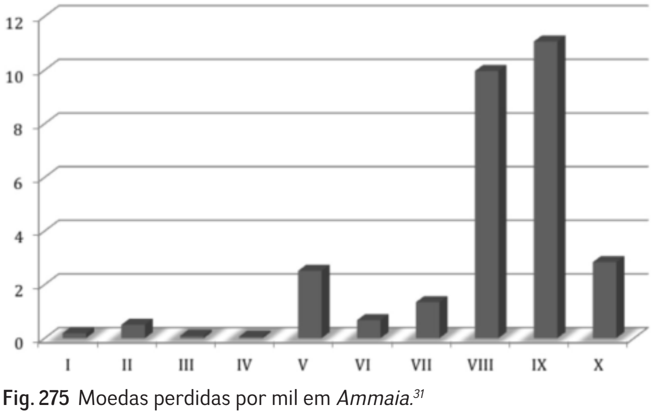

Fig. 275 Moedas perdidas por mil em *Ammaia*.[31]

O período inflacionista dos anos 260-274 está marcado pelo forte afluxo de bilhão radiado, de baixo valor intrínseco, sobretudo após 270 com a irrupção das imitações da série *Divo Claudio*, muitas das quais se manterão em circulação até uma data avançada do século III, compensando a redução dos volumes de moeda cunhada após a reforma de Aureliano.

Ao longo do século IV e até 364, assiste-se a um aumento progressivo do número de moedas perdidas em *Ammaia*, reflexo da intensificação da produção, mas reflexo também da desvalorização da moeda e da pouca importância que os contemporâneos lhe atribuíam (daí o pouco esforço colocado na sua recuperação) e reflexo ainda da brutal alta dos preços.

No último terço do século IV o número de moedas perdidas decai sensivelmente, sobretudo a partir de 386, espelhando uma diminuição do abastecimento, fruto da redução das cunhagens do bronze nas casas da moeda ocidentais, até aí as grandes abastecedoras de numerário à cidade, com destaque para Arles e Roma. Um sólido de Graciano indicia a emergência da moeda de ouro, cuja afirmação parece ocorrer lá mais para final da centúria-inícios do século V. Quanto à moeda de prata, a ter corrido na cidade durante o século IV, terá sido em quantidades reduzidas, não tendo deixado para já qualquer sinal visível.

Uma nota final para a modesta presença do numerário de imitação do século IV em *Ammaia*. De origem principalmente gaulesa, estes espécimes integraram-se na circulação local, sendo admissível supor que terão circulado a uma taxa de câmbio inferior à das séries oficiais. Com o passar do tempo, umas foram inevitavelmente descartadas enriquecendo de imediato o registo arqueológico, outras engrossaram a imensa amálgama em que se terá tornado a massa monetária circulante após 395.

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[30] O cálculo foi efectuado com base na fórmula apresentada por P. J. Casey (1986: 88-90).

[31] A cronologia dos períodos considerados no gráfico é a seguinte: I. 27 a.C.-68; II. 68-96; III. 96-192; IV. 193-260; V. 260-294; VI. 294-305; VII. 305-330; VIII. 330-348; IX. 348-364; X. 364-402.

V.8 THE EXCAVATIONS AT *AMMAIA*: ZOOMING IN ON A TOWNSCAPE

Cristina Corsi

As this volume will close the first "round" in our efforts to disseminate the knowledge that we have been able to piece together about the deserted Roman town of *Ammaia*, some conclusive remarks seem to be necessary, starting from commenting on the general framework of a project where both survey and excavations have been awarded the same attention.

The publication of the first volume of this series, jointly with the almost simultaneous publications of the urban surveys of Wroxeter (White *et al*. 2013) and *Ocriculum* (Hay, Keay and Millett 2013), and paralleled with important extensive urban survey case studies like *Carnuntum* (Doneus, Neubauer and Scharrer 2001; Eder-Hinterleitner, Neubauer and Melichar 2003; Neubauer, Seren and Eder-Hinterleitner; Neubauer 2011) and *Falerii Novi* (Keay *et al*. 2000; Hay *et al*. 2010), has shown that the developments in technologies and strategies and the integration of different research approaches can achieve great results in the definition of urban layouts and – most important – in the understanding of ancient towns in their complexity. The most restrictive limit of these non-destructive approaches is the very imperfect definition of chronological phasing, and therefore integration of excavation data has always been regarded as a necessary step for the comprehensive understanding of historical and monumental developments of these urban contexts[1].

The comparison between the situations of Wroxeter and *Carnuntum* versus *Ammaia* is particularly apt, mostly if we take into account the long history of excavations in the English site, and the high quality of their publications, which makes it even more striking that the percentage of the settlement actually excavated is almost negligible. Yet, in the light of the results of the survey, new insights into the former excavation interpretations are offered in this latest publication, proving the survey and excavations can reciprocally support and enhance each other (White *et al.* 2013).

This goal is pursued here, even if the extension of excavated areas in *Ammaia* is limited when compared not only with Wroxeter and *Carnuntum* but with many other sites.

Rome was not built in a day. *Ammaia* neither

Although sometimes uncertain and not completely documented, the phases of large scale architectural/urbanistic interventions that we individuated for the three excavated areas presented here (the Forum, the Baths and the Southern Gate) seem to be synchronic.

The first structures, found in the *amb. B* of the Baths (section II.2.a) and in the pre-monumentalization of the Southern Gate (section III.1.a), are considered related to the earliest finds in the latter case (Italic *Sigillate* and coins), while at the Baths the framing into the first phase is more due to the relative chronology of structures. The same applies to the NW wing of the cryptoporticus of the Forum, where the almost absolute lack of materials found in the anthropogenic filling of the space between the two walls delimiting the portico has been interpreted as an indication that human presence on the site was still very limited when these works started (section I.2.b). Old excavations brought to light some levels, considered among the earliest[2], that are dated to the second half of the first century AD (section I.1.b), but further research has shown that the natural soil was not reached in the area, and therefore this chronology has to be attributed to the first phases of use of the Forum portico and not to its construction. Moreover, even if numerically underrepresented, the fragments of Italic *Sigillata* from the Forum (types *Conspectus* 21, 22 and 24) can be considered among the earliest of the types, dating to the first half of the first century AD, originating in the Augustan age (section V.3.c). The same applies to the South-Gaulish and Hispanic *Sigillate* from the Forum, which are almost entirely lacking types of the Flavian period, a period that is, instead, the best represented – mainly by South-Gaulish productions – in the Baths (sections V.3.c-d).

The scarcity of finds from the transition between the first century BC and the first century AD has been underlined on several occasions, and a few finds can possibly be considered residual, but they undoubtedly confirm our idea that the town was founded during the Principate of Augustus, likely in the last years of the first century BC or the very beginning of the new era (Corsi, Johnson and Vermeulen 2012: 122; Corsi and Vermeulen 2012b: 6). We have to admit that the methodology of the old excavations deprived us of having a sure relationship between structures and stratigraphy, but we cannot deny that the presence of such materials witnesses the establishment of a group of people who made use of types of pottery and currency that were not attested in the area before.

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[1] A case study from the Iberian Peninsula where an early application of this approach was performed is Penãflor, in the Lower Guadalquivir valley: Keay, Creighton and Jordan 1991.

[2] The same considerations can be proposed for the Italic *Sigillata* from the Baths (section V.3.d).

As we have stressed on several occasions, the first settlement must have been just a "generative cell", composed of surveyors, engineers, soldiers and masons (skilled workers but also manpower recruited locally?) in charge of the materialization of a project. This project is so blatantly "Roman"[3] that it openly claims for the will of the emperor imposing a well defined framework for the community that will inhabit it.

Moreover, to support our beliefs we made use of the analysis of the building techniques, showing that different techniques characterized the chronological phasing (see chapter V.1). As in the well documented case of *Augusta Emerita* then, the town's urbanization took place in several stages, each with unique characteristics, at least in the building techniques (see the general framing in Diarte Blasco 2012: 51-52).

The first settlers operated according to a routine programme in which they were well experienced and, after tracing the ideal line of the regular urban grid, they proceeded with the implementation of the drainage system. With the advent of Claudius, the monumentalization phase took off fully and to the Julio-Claudian dynasty we can attribute the first large-scale public projects, such as the Forum (section I.1.a) and the first version of the Southern Gate. Our preference for the reign of Claudius is due to the important epigraphic document which relates Claudius to the awarding of the status of *civitas* to the town (Mantas 2012a: 14-15)[4].

It may be considered odd that just a few decades later it was necessary to complete the first programmes of monumentalization, if not to undertake new construction of infrastructure and housing sectors, but this short time span between two substantial remodelling programmes finds comparisons in other Hispanic towns more extensively excavated. Comparative research can rely upon the important centres of *Italica*, where the programme of monumentalization is estimated to have started in the Augustan period and was not completed until the reign of Tiberius (Rodríguez Hidalgo and Keay 1995: 402), the above mentioned *Augusta Emerita* (Alba Calzado 2001b: 402-418), and *Caesaraugusta* (Diarte Blasco 2012: 85). Furthermore, we can refer to the interesting remarks which Jorge de Alarcão formulated about the forum of *Conimbriga*, where the radical remake undertaken in the Flavian period of the Augustan complex is, of course, brought into relationship with the elevation of the town to municipal status, but is mostly explained by the urge to give a new religious meaning to the monument, devoted now to the imperial cult (Alarcão 2004: 266-269). It is also very appropriate to quote Alarcão's observation about the question of the "fund-raising" for the many public projects that appear to be undertaken in *Lusitania* in such a short time span. It is therefore clear that these direct interventions of the emperors have to be spread over several decades.

At the beginning of the second century AD, in *Ammaia* also several work-yards were likely still open. Such is the impression at least in the Southern Gate area (chapters III.1, III.3), and at the Baths, where a large-scale remodelling programme was undertaken between the end of the first and the beginning of the second century AD (chapter II.4). This impression is confirmed by the study of the building techniques. The analysis of the selected samples of walls, in fact, demonstrated that most structures of the cryptoporticus of the Forum seem attributable to the Julio-Claudian period (section V.1.b), while most of the samples from the Southern Gate can be assigned to the Trajanic period.

The latter might be considered as the only period of the second century during which major building activities were carried out in the excavated sectors. The mention of Emperor Lucius Verus in the important epigraphic monument that attests to *Ammaia's* achievement of municipal status (Mantas 2012a: 11), does not find – at this stage of research – any link with the remodelling or construction of public buildings in the town in the course of the second half of the second century. Furthermore, for the Antonine period in general, an abnormal scarcity of coin finds has been observed, for which the possible explanations have to be sought in the fact that the needs were still met by the coinage of the Flavio-Trajanic period more than with a decrease of the volume of currency in circulation (section V.7.b).

The excavations in the Forum portico, although of limited extent, show that after the construction phase, many decades elapsed without detectable architectural interventions, and what was recorded is just a slow accretion of floors. Only during Phase IV, hypothetically established in the Late Imperial period, do we have tangible proof of a shift toward private use of the Forum structures, and a degradation of urban space typical of the well known phenomenon of “ruralization” of towns (*infra*). Indeed, even in the temple area, no signs of activities after the last repaving of the square in front of the temple were detected. These building activities have to be placed before the end of the first century AD, even if we cannot exclude that some of these works extended into the full Trajanic period (section I.2.a).

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[3] I am aware of the fact that this adjective has been loaded with meanings and at the same time deprived of them by the many scholars who have discussed the matter of Romanization and cultural change. With this qualification, we intend here a model of grid-pattern towns, with very regular layout, the most complete and elaborated examples of which are known as Augustan foundations (Corsi 2012a: 141).

[4] Moreover, in the *Hispaniae* most fora seem to be built and monumentalized during the Julio-Claudian phase (Diarte Blasco 2012: 248).

We placed the remodelling of the *amb*. D of the Baths in the course of the third century AD. These renovation works seem to have modified markedly the aspect of what we consider the open courtyard/*palestra* of the thermal complex, proving that consistent financial resources were still available for investing in public infrastructures. In fact, if we analyse the Baths of *Ammaia*, we have to stress that, in spite of the frequent transformations and remodelling that occurred in the area, no cessation of the thermal use seems to have taken place in the investigated area, and there is no trace of a shift toward a private use, for housing or commercial/industrial purposes, as documented elsewhere (e.g. *Complutum*, where the Baths of the Forum were used to dump garbage as early as the mid second century AD, while the Termas de los Arcos I were converted into spaces for residential and productive functions: Diarte Blasco 2012: 118-199)[5]. However, in the *Hispaniae* the most recent census of Late Antique phases in Roman towns proved that most thermal complexes kept their functions beyond the third century AD, the fourth century even featuring some new constructions (Diarte Blasco 2012: 264-267). This is an interesting point to stress, as it has been unanimously agreed that the story of bath complexes is closely linked to the history of the centre in which they are located. Above all, we have to take into account that the continued use of a thermal building includes not only the presence of authority that guarantees its maintenance and management, but also the ability actively to maintain the water and fuel supply systems (Fernández Ochoa and Zarzalejos Prieto 2001: 29). Undoubtedly, during the Late Roman phase, the state of use and efficiency of thermal complexes can be used as a parameter to assess the social and economic vitality of an urban centre. In fact, baths can be considered as one of the clearest expressions of adoption of the Roman lifestyle, their impressive spread marking the transformation of townscapes during the early Imperial age and pointing at the embracing of the social model of *panem et circenses*, later replaced by the more popular and “bon vivant” fashionable slogan of *balnea*, *vinus et Venus* (Fuentes Domínguez 2000: 135). In fact, this monumental type is especially sensitive to changes of the tastes and habits of their socially diversified clientele. In Late Roman society, when the traditional and institutional areas reserved to political and commercial functions, like fora, progressively lose their role, one of these changes is related to the use of the baths as gathering and meeting places. From the Flavian period onwards, baths and *collegia* are preferred as places where business and lobbying are carried out, a favourite context for socializing and leisure, where the separation between public and private life was blurred (Fuentes Domínguez 2000: 136). In most structured urban centres, the use of the public baths seems to be guaranteed well into the fourth century AD, but rarely (e.g., Zaragoza and Astorga) until the fifth century, often with interventions of remodelling that are archaeologically (like in *Complutum*) or epigraphically documented (e.g., Lisbon: AD 336, *CIL*, II, 191; see Fuentes Domínguez 2000: 140-141).

In *Ammaia*, if the abandonment of the complex happened as we proposed not earlier than the beginning of the fifth century (*infra*), we have to evince that the town was still able to raise enough resources to maintain efficiently the water and fuel provisioning systems. But, due to the unfortunate situation created by the presence of the national road, we cannot establish whether or not the sewer constructed along the pool is directly related to the functioning of the thermal complex, as I am inclined to think. What is sure, however, is that the clogging of the channel cannot be earlier than the second half of the fifth century, as proven by the discovered lamps (chapter II.6), amphorae (presented in chapter II.8) and “black glass” bracelets (here not covered in the catalogue, but belonging to the same group of those catalogued pieces presented in chapter V.6).

Another essential contribution to the discussion is offered by the coins: of those collected during the old excavations, three-quarters of the total belong to the fourth century (section V.7.d). Of course, it can be argued that the last phases of occupation are those that leave the most evident traces, but still the percentage is remarkable.

We cannot deny that some dramatic changes affected the whole economic and productive system relatively early, likely as early as the end of the second or the beginning of the third century, as the recurrent reuse of materials, even in public projects, shows. The clearest example of this is indeed the above mentioned wall of the *cloaca* bordering the *natatio* of the Baths (section V.1.c.). Some other not fully understood activities affected the roadway E of the complex. The width of this so-called *decumanus* was already substantially reduced by the construction of the Baths (section II.2.b). Elsewhere, we have argued that this phenomenon, technically definable as encroaching of the street network, does not have to be considered as a symptom of the degradation of the urban plan or a corruption of the original scheme, but instead as part of a very common process of implementation and “adjustment” of the ideal design to the practicality of the buildings (Corsi 2012a: 144-146). In this case, it is easily acceptable that the decision to insert in this block an important public monument was followed by the initiative of the designers to enlarge the total surface of the building. What happened later in what we called *amb*. H is, instead, rather related to one of these above mentioned phenomena of blurring of the borders between "public" and "private" spaces, and the impression we got (an impression that only further research and an extension of the excavation area will be able to confirm) was that some makeshift shelters had taken over the public roadway in a later phase.

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[5] A strong limit in this comparative study is given by the fact that our knowledge of most thermal complexes of towns with continuity (e.g., Merida, *Tarraco*, *Barcino*, etc.) is extremely poor: Fernández Ochoa and Zarzalejos Prieto 2001: 28.

The fact that we are not able to understand better the transformations that occurred in the urban streets in their later phases is particularly frustrating. Only two small portions of the so-called *decumanus* flanking the Baths and of the so-called *cardo maximus* bordering the Forum have been investigated stratigraphically, whilst the long stretch of the same *cardo* departing from the Southern Gate and heading to the city centre did not preserve the metalling but only preparation layers in compacted reddish clay (section III.1.a).

All these processes of encroaching and privatization of roadways have been wonderfully documented and analysed in the provincial capital *Augusta Emerita*. Here, roadways were progressively invaded by private building and they kept on narrowing under the expansion of private *domus*, while the infill in dry masonry of the intercolumnations transformed the porticoes into a series of private dwellings, and the accumulation of rubbish and debris caused the rise of floor levels (Alba Calzado 2002, 2004). Moreover, in many Hispanic towns, like elsewhere, it has been underlined that, already in the second century but even more in the course of the third, the urban street network starts to disconnect and "de-compose", with appropriation of branches of streets by private occupiers, obliteration of other street segments – mostly as effect of the uncontrolled growth of the floor levels –, the change of orientation of many urban axes, and the final disruption of the original layout. The fact that in *Ammaia* this phenomenon is only partially evident most likely militates in favour of a fairly early abandonment of the settlement (Diarte Blasco 2012: 23).

The phenomenon of privatization of public spaces seems, indeed, sufficiently documented in the Forum area, or at least a radical transformation of its use and function must be inferred on the basis of the excavation results, even if most elements that we collected in relation to the later occupation, abandonment and spoliation of the portico of the Forum cannot be precisely dated.

The finding, during the old excavations, of the skeletons of two herbivores under what was considered as the collapse rubble of the roof of the portico, apparently proves the fact that the structures, or at least part of the structures, of the main monumental complex of the town, suffered improper and degraded use, but we cannot determine when it happened. It has been hypothesized that the portico was used as stable or shed for animals in the course of the middle or late Imperial period (section I.2.b). If it is true that many bones of slaughtered animals were found in the fills of the portico in the sector later indicated as P1, as stated in the old excavation reports, then it is clear that this use as garbage dump, likely connected with a collapse of the structure, must have been effective when a community still lived in the area. Therefore, the *terminus post-quem* is given by the coins of the fourth century, the *Sigillate* of the end of the fourth and beginning of the fifth century, and the Lusitanian amphorae which cover a time span reaching or exceeding the fifth century AD[6].

Among the typical phenomena occurring in towns during Late Antiquity we surely have to list the "conversion" to productive activities of urban sectors formerly devoted to other functions. The presence of a workshop for the production of glass, not documented by excavations but rather by the consistent amount of waste glass in the area of the Southern Gate, can be easily framed in this context (chapter V.6).

The uncertainty about a possible late phase of the wall circuit, or at least of important remodelling of the gate, which we tend to exclude, weighs heavily on the evaluation of the dynamism of the town during the Late Roman phase (*infra*). This question is extremely important as interventions undertaken by municipal administrations to reinforce or restructure the urban defences are considered some of the clearest indicators of aspiration to magnificence and possibly of rivalry with neighbouring towns, loaded with symbolic meanings (Millett 1990: 140-141). In this case, we should take into account this display of public wealth and explain the contrast with the paucity of ostentation of luxury registered in the Forum area mostly for the later phases, a poverty that can be only partially justified by robbing activities (*infra*).

Integrating the results of the survey and excavations, the perception we get is that, from the beginning of the fourth century AD, the town seems to be involved in a process of transformation rather than degradation, with the fragmentation of the biggest estate units, the conversion of certain areas to production activities, and the utilization of wider areas for "rural" activities like animal farming. We should probably interpret in this sense the remodelling of the house partially excavated inside the building of the Quinta do Deão: here all existing structures were dismantled and replaced by new walls, which partitioned the space into several rooms, replacing the small private bath and converting the function of this building from hygiene and leisure to residential (Pereira 2005b: 66). Restructuring activities are also witnessed in the Southern Gate area by the analysis of building techniques. Some of the samples selected there can be attributed to the fourth century, on the basis of comparative research on the technique itself, with the characteristic abandonment of the principle of regularity and the recurrent use of *spolia* (sections V.1.b, V.1.c). The housing sectors around the gate were restructured between the last quarter of the third and the beginning of the fourth century AD, and other alterations occurred during the last quarter of the fourth–mid-fifth century AD. The Late Antique and Early Medieval period is also witnessed by some architectural finds (Pereira 2009). As anticipated above, contrary to former studies we are inclined to consider the "later building phases" of the towers flanking the gate to be the result of recent restoration works, and therefore we do not consider likely a significant intervention to the walls during the Late Imperial phase (see section III.1.a and chapter III.2). From an undefined locality in the vicinity comes a Visigoth belt buckle (Pereira 2005b: 66), which confirms the presence of the Goths, who arrived also in this remote area of the Peninsula at the beginning of the fifth century AD.

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[6] The phenomenon of residuality, stressed with great emphasis by José Carlos Quaresma for the most recent layers (chapter V.3) does not seem striking to us, as it is quite normal that, in parallel with a decrease of the volume of trade, the long life of the town and its by-then deep stratigraphy interfered with the new building or excavation activities carried out on the site.

The specific quest for indications of the "Christianization" of the local community does not bring to any appreciable result and evidence is more than scanty, if we exclude the doubtful information that we have in the local literature. The finding in the ninetieth century of a Christian funerary inscription, the present whereabouts of which remain uncertain, is reported by Afonso do Paço (1951: 111), the text commemorating Optatus, "*famulus Dei*", who died in AD 513. Several roof tiles with crosses impressed in the clay have been found in *Ammaia* (Pereira 2005b: 68); a tile with the inscription "(h)IC PAX C(h)RIST(vs)" has been reported to be found in Monte Velho area, in the Beirã district (Paço 1951: 113).

Surprisingly, none of the complexes which we can delineate through the "radiography" of the subsoil obtained with the geophysical survey can be interpreted as a Christian "basilica", for the presence of "signature" building features like apses cannot be demonstrated. It is indeed possible that rural settlements in the *suburbium* were preferred for the establishment of Christian communities and places of worship. The excavations carried out in the *villa* of Torre de Palma (Monforte), in the southern part of the territory of *Ammaia*, prove without doubt that this huge rural complex, which underwent renovation works in the course of the fourth and even the fifth century, was upgraded to the role of reference settlement for a whole country district, at least for Christian worship (Maloney 1995; Maloney and Ringbom 2000).

In this antagonism between town and country probably lies the explanation of the abandonment of the site of *Ammaia*. If for its *suburbium* we are still processing the many data published by local scholars and collected by our team (Oliveira, Pereira and Parreira 2007; Vermeulen and Taelman 2010; Vermeulen, Corsi and Meyer 2012), for the wider territory we can rely upon dated but still stimulating works, such as those by Gorges (1979) and Alarcão (1988), integrated with the more recent publications by Maloney and Hale (1996), Alarcão (1998), Almeida (2000), Carneiro (2004) and Monteiro (2011).

We can, therefore, point at the continuity (in forms to be understood better) registered in rural sites spread over *Ammaia*'s territory like Herdade do Mascarro, Vale da Bexiga, Tapada da Pedreira, Mosteiros, Meada, Santo Amarinho, Boa Morte, Pombais and Vale do Cano (Rodrigues Monteiro 1975: 150-172; Pereira 2005b: 64), to argue for a transformation of the settlement patterns, which in the Late Imperial and Late Roman phases seem to abandon the preference given earlier to urban settlements. This is confirmed from the location of a few cemeteries in the countryside, among them the one excavated in the 1970s in Santo Amarinho (Castelo de Vide), dated to the sixth century (Rodrigues Monteiro 1975).

At the same time, rock settlement seems to spread, starting from the end of the sixth to the beginning of the seventh century, with innumerable examples known in the area (e.g., Monthe Velho, Carrasca, Ferrenha, Vale do Luso, Ribeira do Lobo, Mouta Raza, Fonte de Souto, etc.) (Pereira 2005b: 69).

The find in *Ammaia* of a golden *triens*, issued between AD 518 and AD 527, under Justinian I, witnesses that the town was still commercially active in the first half of the sixth century (Paço 1951: 111-112), but all the other indicators point to a dramatic decrease of the volume of trade and the only productive activity documented in the town (the secondary glass production) seems to cease at the end of the fourth or at the beginning of the fifth century AD at the latest (*infra*).

The finding of "Islamic" pottery is mentioned on several occasions in the *Relatorio*s, mainly in the excavation area named Parking Lot 2, in addition to the finds from the nearby site of Cova da Moura, which could be interpreted as a cave shelter or a mine (e.g. *Relatorio* 2004: 73-74). A few sherds of pots and pans dated to the eight or ninth century are related to a small hearth inside the West Tower (Pereira 2009: 72). None of these fragments has been found in the archaeological depot, however, and we therefore cannot confirm this information[7].

The continuity in the occupation of the site until the ninth or even the tenth century, in forms and with modalities that we surely need to investigate further, is yet possible and even plausible, considering that at the moment of the arrival of the Muladi chieftain Ibn Marwān in the area, the existence of *Ammaia* was still recorded, even if "in ruin" (Corsi 2012c: 168). Surely the new Moorish newcomers exploited the by-then deserted town to quarry the material, primarily the granite, that was used to build the new settlement on the hilltop of Marvão, the village that would have perpetuated the name of its founder.

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[7] The two pipes found at the Southern Gate, considered proof of a medieval frequentation of the site (section III.1.a), cannot be earlier than the period of the geographical discoveries.

Summing up, the impression we get is one of an impoverishment of the urban economy and a decrease in building activities starting from the third century. This phenomenon appears fully aligned with a general trend registered in the Iberian Peninsula and in the wider context of the Roman Empire[8], but the impression we get here is that the crisis is more cyclical than structural, more due to the decline of the town's more profitable source of livelihood (i.e. the exploitation and trades of raw materials like stones and minerals). A comparable case study is that of *Castulo*, a mining town in the Andalusian province of Jaén, which endured an economic crisis that started already in the third century, a crisis that, triggered by the contraction of the quarrying sector, soon plagued the whole urban life, with the disappearance of public initiative in the construction industry (Fuentes Domínguez 1999: 28).

Social composition

In the volume *Ammaia* I, we have already attempted an analysis of the social composition of *Ammaia*'s citizens on the basis of the epigraphic assemblage (Mantas 2012a). There, it was underlined how factors like the anthroponyms pointed at a strong native component in the local community. At the same time, the administrative and cultic inscriptions betray a substantial adoption of Roman laws and traditions, even if the presence of several local gods and deities is a clear marker that local cults were not neglected.

What we can remark here on the basis of the material culture is that the social components of *Ammaia* seem not to be characterized by sharp contrasts and not many traces of ostentation of luxury have been detected. At this stage of research, even the most peripheral *domus* of *Ammaia* appear to be equipped with a standard decorative apparatus which implies a relative wealth (*infra*).

We have already underlined the fact that the methodology with which the old excavations were carried out (collecting finds per levels in each square and not identifying contexts related to structures) frustrated our intention to investigate the relationship between buildings and their uses. But even if we will have to enlarge the field of view and be content with less detail, we might still be able to capture the link between space and activities that were performed there.

All the specialists who have analysed the different categories of finds underlined the fact that the area of the Southern Gate provided the largest quantity of materials, which can be without doubt explained by the excavation history. Still, it is also evident that the typological variety, the richness of the repertoire of shapes, the diversification of production areas and the extended chronological range observed on the finds from the area surrounding what we consider the main entrance of the town are factors to be taken into account. In this sense, the extreme poverty of finds from the Forum area, again underlined by the authors of this volume, can be only partially explained by the limited extension of the excavations and it has to be connected to the function and use of the architectural space. Surely, the excavations carried out hitherto did not intercept any storeroom of the shops that surrounded the square nor any rubbish dump created after the end of the public function of the complex so, once more, our impression could be decisively modified by further research. For the moment, however, we cannot but stress this aspect of lack of tangible proofs of economic vitality of this sector.

A specific study has been carried out by Devi Taelman about the quantity, quality, distribution, and provenance of ornamental stone in *Ammaia* (see here chapter V.2 with references). Always bearing in mind that some observations might be biased by the different temporal and spatial extensions of excavations in the three areas, we can stress that the highest quantity in terms of volume of ornamental stone comes from the Forum, which appears also to be the sector where the best quality and most sumptuous and diversified stones were employed (chapter V.2). A great amount of ornamental stone also comes from the Baths and the Southern Gate area, mainly from the squares corresponding to the West Tower (chapter III.2). The largest quantity is composed of white or white-veined marble, with a high additional percentage of pink limestone particularly incident at the Southern Gate. Most pieces have been interpreted as parts of wall and floor revetments. A few architectural pieces come with certainty from these large complexes, while most architectural stones have lost the information about their provenance (chapter IV.1). A fair amount of pieces come from the excavated area of Block XXXVIII, proving that at least some of the floors and walls of *Ammaia*'s *domus* were decorated not only with painted plaster (many fragments of coloured plaster and stucco were collected in all the excavated areas) but also with veneer panels. In general, the decorative programmes at *Ammaia* were rather sober, with white marble dominant among the veneer stones (chapter V.2).

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[8] It is not possible to review here the extensive literature about the 'crisis of the third century' in the Iberian Peninsula but we can mention a few among the most influential, such as Arce (1993 and 1995), Kulikowski (2004) (only Spain), Diarte Blasco (2012) and Sánchez Ramos (2014).

The building techniques have been thoroughly analysed in their technical aspects elsewhere in this book (chapters I.5, II.5, III.4, V.1) but here we wish to stress a few points. Remarkable, first of all, is the persistence of traditional techniques best suited to make use of local stones like limestone, and the widespread use of mudbricks. The latter often would not be detected if excavations were not carried out with a strict stratigraphic methodology[9]. Secondly, we can point out how granite is used differently according to the "level" of the project: in big squared blocks in the main walls of public buildings or in shapeless boulders in the dividing walls and in most private buildings.

We can also underline how different is the evolution in the behaviour of the masons of *Ammaia* in the later phases compared with the workmen operating in other large complexes in *Lusitania*, considering that in *Ammaia* regularity is not sought and African influence is not perceived (section V.1.b). The extensive usage of reused material is interpreted as an indicator of the economic changes that affected the town in a relatively early stage of its history, considering that it seems to have happened even before the general "crisis" that engulfed the Iberian Peninsula in the course of the third century (section V.1.c).

The interpretation of the intra-mural survey brought the individuation of two different "classes" of dwelling, one attributable to the lowest levels of the civic body and another connected to the well known type of higher status *domus*. However, the number of the latter type is limited to five or six individuated examples and we cannot exclude that the bi-dimensional plan that we reconstruct on the basis of the geophysical survey is a later development, and that the original social composition of the citizens of *Ammaia* was more equal (Corsi and Vermeulen 2012c: 151-155)

Moreover, a certain inconsistency of extreme social inequality among the classes of *Ammaienses* is manifested by the scarcity (better, absence) of testimonies of evergetism, on which we already formulated some observations (Corsi, Johnson and Vermeulen 2012: 143; Corsi and Vermeulen 2012d: 174-176). Obviously, we are aware that we are adopting here an "*argumentum ex silentio*", and that our opinion might be fully reshaped following further research and finds, but at this stage we cannot but stress the lack of blatant intervention of the elites. The impression we get, mostly looking at the grid layout, at the limited number of public complexes (Corsi and Vermeulen 2012c: 156), at the simplicity and conventionality of the decorative apparatus that sometimes results in ordinariness, we are tempted to argue for dominant external inputs and a public life that was very centrally managed and not left to individual initiative. This opinion is not shared by Devi Taelman, who – on the basis of the assessment of the quality and quantity of ornamental stone – argues instead for an active role of the local elites in the decorative programme and embellishment of public monuments via the traditional modus of munificence (chapter V.2; Mackie 1990). This would not be surprising, considering the extensive comparative cases, but the lack of epigraphic documentation and the relative modesty of the surviving decorative apparatus of the public monuments of *Ammaia* prevent us from a proper assessment of the phenomenon.

Contrary to my intention, it has not been possible to present here the excavations of the housing sector under the museum of the Quinta do Deão, and therefore the analysis of the peculiarities of the town's housing characteristics is not supported by new data that could integrate and complement what is already published on the basis of the survey (*supra*). For this reason, here we would limit our consideration to the estimation of the population, made solely on the basis of comparative research[10]. Some estimation was proposed by Menéndez Pidal (1988) for the Late Roman period on the basis of the *Ordo nobilium urbium*, a scholarly compilation authored by Decimus Magnus Ausonius (AD 310–395), which in Spain quoted only Merida. Integrating those data with what is known from other sources, we can guesstimate the population of Late Roman towns as having a density of inhabitants per hectare ranging from a minimum of 333 (*Italica*) to a maximum of 444 (Sevilla) individuals (Menéndez Pidal 1988: 87-91). Among the calculations proposed by Menéndez Pidal, in Iberia the most suitable comparison for *Ammaia* is *Numantia* (24 ha, 335 inhabitants/ha = 8000 inhabitants), for these two towns have similar total intra-mural extent. Still, taking into account our reconstruction of the effective occupation of the intra-mural surface of

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[9] The use of mudbrick and adobe is documented in many other Hispanic sites (e.g. *Celsa*: Beltrán Lloris 1985: 109-111).

[10] The "fragility" and biases of large scale demographic estimates have been recently pointed out by Alan Bowman and Andrew Wilson, but at the same time these authors underlined how recent studies have been enlarged and strengthen the basis for the calculation made for urban settlements (Bowman and Wilson 2011b: 2-3, with references). Wilson, after summarizing very briefly the literature and the available methodologies for population counting, argues that, if credible multipliers can be established, the calculation on the basis of the urban surface is the "least bad one available, and is the only method for which there exists sufficiently abundant data for large numbers of cities" (Wilson 2011: 170, 176). In any case, on the basis of the correlation of the evidence of Roman cities in the Mediterranean of household counts and areas, a normal outer range of 100–400 people per hectare is suggested, where a "fork" between 150 and 250 people/ha is considered the most likely (Wilson 2011: 176).

Ammaia, limited to the less steep area, the total for our estimated 16 urbanized hectares would amount to a hypothetical population of 5360 inhabitants. This estimation is comparable to that proposed for *Celsa*, now Velilla de Ebro, not far from *Caesarugusta*, where the population of the small town of around 8 ha (Gómez-Pantoja 1992: 291) – half the urbanized surface of *Ammaia* – is estimated in its heyday at around 3000, on the basis of a calculation of *c*. 360 inhabitants/ha (Beltrán Loris 1985: 108)[11].

Cesar Carreras Monfort carried out some studies with the main focus on the estimation of the demographic territorial entities and the relationship between town and country in the Iberian Peninsula, with a review of the state of the art (Carreras Monfort 1995-1996: 59-61; 1996: 97-100). The population density he selected for secondary centres, applying the narrowed "fork" of 150–350 inhabitants/ha, is 233 inhabitants/ha (Carreras Monfort 1996: 100-103, with references, see note 11). Keay and Earl (2011), criticizing the work of Carreras for being based on data somehow too old and "inaccurate", proposed for southern Spain a crude calculation on the basis of the approximate minimum (137) and maximum (216) per hectare for pre-industrial populations provided by Hassan (1981).

The calculation that we made for the Early Imperial phase on the basis of the observation of the architectural characteristics of the blocks of *Ammaia* starts rather from the consideration that an average number of four to five residents per household is too low if it has to include all individuals (women, children and *servi* or *familii*), and that even in a secondary centre an average availability of 30 m^2/person should be considered normal. Even if in the cases analysed on the basis of the high-resolution GPR survey it was proposed that Block X was divided into ten residential units (Verdonck and Taelman 2012: 75-79), it does not seem possible that fewer than 80–100 individuals lived in *c*. 2700 m^2, mostly taking into account that some rooms used as *tabernae* might have hosted the owners and their servants on a second floor (see note 11). If we divide the 16 ha of the intramural (urbanized) surface by 3000 (the average square metre area of each block including the surrounding streets) and we deduce from the total of 53 at least four blocks fully occupied by public monuments and infrastructures, we get an estimation of population ranging from a minimum of 3920 to a maximum of 4900 individuals.

Economy, commercial relationships and trades

The economic background of *Ammaia* has been presented elsewhere (e.g., Corsi and Vermeulen 2008; Vermeulen and Taelman 2010; Taelman 2012), and therefore it is sufficient here to summarize the essential points of our analysis. The main motivation for the foundation of this town is readily related to the convenient geographical position that makes of *Ammaia* a junction and crossroads of the road network connecting coastal towns with the inland and the Lusitanian capital *Augusta Emerita*. While agricultural production from farming must have been limited, considering the poverty of the local soils, animal husbandry and stone (mainly granite) quarrying have been shown to be among the main items in the town's economy. The access to mineral and metal resources is also considered one of the reasons for the city's wealth (Deprez *et al*. 2009; Taelman *et al*. 2009, 2012; Taelman 2012: 21-22).

Elements neglected in the first publications of the old excavation of *Ammaia* irrefutably proved the presence of secondary glass production in the area of the Southern Gate (section V.6.b). The waste glass collected in the course of the excavations is composed of fragments with a broad chronology, with the earliest vessels finding comparisons with the repertoire of the first century BC and the latest dated to the fifth century AD, but these have to be related to the last productive activities of the workshop, likely to be fixed at the end of the fourth century AD. Apparently, at the time preceding the closure, this workshop produced arched cups and bowls, vessels with cracked-off rims, thin-walled cups and beakers, and black glass adornments. Very few fragments can be considered imports from further away regions; among them we can stress those for which an Egyptian, Italic or Iberian origin has been hypothesized (V.6.c).

About the coin circulation, we can stress, with José Ruivo, how determinant in *Ammaia* is the percentage of smallest denominations, in most cases to be considered coins that lost their purchasing power (section V.7.a). Even taking into account that such low value coins are usually the easiest to lose or are even intentionally abandoned by their owners, the fact that only a few of the highest nominals were found in the two hoards from the Southern Gate is noteworthy[12]. Still, in *Ammaia* we register a relative incidence of circulation of silver pieces, which seems to increase significantly at the end of the reign of Trajan or the beginning of Hadrian (section V.7.e). Anyway, until the second half of the third century, the cash flow looks relatively modest, with the exception of the Flavian period, when the quantity of currency arriving in the town seems to increase slightly (section V.7.e).

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[11] The author stressed the unreliability of this type of calculation pointing at the fact that in *Celsa* in the House of the Dolphins only one family occupied the whole *insula*, while in the block where the House of the Amphorae is located, at least six families lived: Beltrán Loris 1985: 108. Furthermore, we should recall that most mezzanines above the shops and the rooms opening onto the street housed other people.

[12] One of the coin hoards (*tesouro 1*) amounted to a total of more than 54 *sestertii,* the second (*tesouro* 2), which is thought to have been hidden by the same person, with its value of a little over 8 *sestertii*, has to be considered just a money box for current expenses (section V.7.b). The real value of *tesouro 1* was given by the presence of several silver *denarii*.

The early Imperial coinage is predominantly from the provincial Hispanic mints, with *Augusta Emerita* as the main place of issue, and the very few exceptions come mainly from Rome or undetermined western provinces. With time, Rome seems to be the main place of minting but the relevant quantity of imitations diversified consistently the range of provenance of the coinage circulating in *Ammaia*, while the fourth century sees the affirmation of the western mints (chapter V.7).

When evaluated from the point of view of the circulation of pottery, the state of the economy of *Ammaia* in its early days has been defined as embryonic by José Carlos Quaresma (section V.3.a), while the quantitative analysis of the amphorae circulation brings Caterina P. Venditti to consider *Ammaia* already well inserted in the markets from the end of the first century BC (section V.5.b). Indeed, even if we limit our analysis to the fine wares, the presence of shapes which dominate the Italic markets confirms the late Augustan and Tiberian chronology for the start of these trades.

The assemblage of the fine wares points to the provincial capital, *Augusta Emerita*, as the leading provider of thin-walled pottery and lamps, with few other production centres, still mainly located in the Iberian Peninsula (*Baetica*, Gades, generically Hispanic), featuring in the imports of lamps (section V.3.f), while the *sigillate* from Mérida do not seem to meet the taste of buyers. At the same time, the import of Italic *Terra Sigillata* is already stable during the Claudio-Neronian period and becomes more dynamic during the Flavian decades.

From the point of view of the quantification of fine wares, the second half of the first century AD is indeed characterized by a boom of the economy, with loads of *Terra Sigillata* vessels arriving from Southern Gaul, specifically from the production centre of La Graufesenque, which, likely already during the Flavian age, is paralleled by Hispanic production centres led by La Rioja and *Baetica*. Instead, the first decades of the second century mark the end of the South-Gaulish trade, with the Hispanic producers remaining the main centres supplying *Ammaia* during the second century AD (section V.3.f). The mid-Imperial and later panorama of fine wares is obviously dominated by the African imports, though paralleled with Late Hispanic *sigillate*, the fourth century being the golden age for the African trade (section V.3.e).

The finds from the Southern Gate, much more abundant due to the history of research, seem to point to a still-active economic life during the first half of the fifth century, even if a relatively sudden decrease of imports of fine wares that had already started in the second half of the second century is suggested. Indeed, contrary to what is documented elsewhere, the fifth century sees in *Ammaia* a dramatic decrease of the volume of exchange and the disappearance of productions from Gaul, southern *Hispania* and the eastern Mediterranean.

The assemblage of coarse ware from *Ammaia* is still far from being understood and inserted in the international panorama of comparative studies. What can be said at this stage of research is just that the relatively abundant fragments of imitations of Pompeian Red Ware can be divided into two groups, one with internal slip datable to the Early Imperial period, and another where the lack of the internal slip suggests a dating in later phases (section V.4.f). In general, even if nothing can be said about production centres, it can be underlined that coarse ware circulating in *Ammaia* was modelled on Italic forms (section V.4.f).

As noted above, the geographical position of *Ammaia* makes it an ideal stopping place along the routes connecting the Lusitanian inland with the production centres of the Atlantic coast, and it is for regional markets that the town plays a key role, as is well documented by the statistics of amphorae imports (section V.5.b). The prevalence of Lusitanian amphorae is paralleled with imports from *Baetica*, Gaul and Italy, with “episodic” proofs of long-distance trades from the eastern Mediterranean (section V.5.c).

As repeatedly stated, an important item in the economy of the town was quarrying and trade in stone. It has been clearly documented that most of the granite used in *Ammaia* was quarried in the immediate surroundings of the town (Taelman *et al.* forthcoming). The origin of the white marble has been determined to be in the Estremoz area (Taelman *et al.* 2013a, 2013b), about 80km S-SW of the town. The pink-purple limestone was quarried in Alconera (Spain), while the quarries of the grey-white marble could be located in the Estremoz Anticline; only the marble breccias are imports from the southeastern Mediterranean (chapter V.2). Notwithstanding that the range of the main trades can thus be defined as “regional”, the relevant volume of these imports of luxury goods is undoubtedly a sign of the wealth and economic prosperity of the town as a whole, even if the remoteness of the location and the high costs of overland transport surely affected the choices for decorative programmes, favouring local material like granite for architectural elements like columns and capitals, which were likely worked onsite, avoiding the complication connected to the transport of fragile and bulky goods (chapter V.2 In section IV.1.c is mentioned a not fully finished granite altar, which proves that such monuments were worked on site.).

Living a "Roman" urban life

Roman power was reproduced by local communities by way of replicating locally certain "urban" structures which were considered essential to the generation of a Roman identity. This concept relied mainly on the presence of specific elements that were related to political, religious, economic and social rituals, and were further loaded with meaning through the use of epigraphy. The role played by the public architecture of a provincial town in this process of "reproduction of imperial power" and of definition of hierarchies and identities has been well highlighted in the most recent literature (Revell 2009: 150). The presence of buildings for politics, for religious ritual and for bathing (in *Ammaia*, we have still to prove the existence of buildings for entertainment such as a theatre) shows how public spaces of the town could be used not only to implement the "feeling of belonging" but could also be a means to express local identities. In any case, we cannot underestimate the importance and social implications of certain new habits, such as bathing. It is, therefore, our intention to consider the monuments not from an architectural and aesthetic point of view but to highlight the role of buildings as social spaces. The relationship between spaces and people that frequent or inhabit them is, in fact, a reciprocal and bi-directional one, where buildings, people and activities influence and are influenced by the other factors. Each space, built or open, is given meaning by the activities that are performed in it in such a way that "the built environment; and practice become meaningful according to the who and the where", generating the "concept of architecture as lived experience" (Revell 2009: 19, 172).

At this stage of our research, we cannot state that the Baths of *Ammaia*, whilst built toward the end of the Early Imperial period, bear witness to the growing social importance of the bath facilities measured through the richness of their decorative programme and the vastness of their spaces, but we can surely underline the fact that the presence of the *palestra* includes the Baths of *Ammaia* among the provincial examples that better express their symbolic role and this transition from a purely hygienic function to a place for leisure and social appearance (De Laine 1992). The same emulative motivation can be attributed to the presence of a second commercial area in the one that we reconstructed in the area of the Southern Gate. The "multiplication" of public squares with the appearance of a forum in *Hispania* is not a phenomenon that involves only provincial capitals like *Tarraco*, *Corduba* and *Augusta Emerita*, but also towns like *Saguntum*, *Italica*, and *Caesaraugusta*. It seems to be due to an emulation of the imperial fora of Rome (Jiménez Salvador 1998). Furthermore, the presence of a very typical and large tripartite forum compensates for the lack of other documented public monuments, if we consider the number and embellishment of public buildings as an index of "the impact of the Roman presence on their social systems" (Millett 1990: 104)[13].

It is not possible here to review the extensive literature which has recently and less recently been devoted to the analysis of the concept of Romanization, even if we only limit our range to the essays referring specifically to the *Hispaniae*, adopting the tenet of "regionalization" in the acculturation phenomena (see, e.g., Salinas de Frias 1986; Blázquez 1989; Edmondson 1990; Trillmich and Zanker 1990; Curchin 1991 and 2004; Coarelli, Torelli and Uroz Sáez 1992: 65-325; Freeman 1993; Keay: 1995, 1997a, 1997b, 2001a, 2006; Le Roux 1995; Blázquez and Alvar 1996; Richardson 1996; Hidalgo, Pérez and Gervás 1998; Mayer, Nolla and Pardo 1998; MacMullen 2000: 50-84; Bernardes 2010; Sauren 2010, and the regional studies on provinces like González Román 1981; Pereira Menaut 1988; Santos Yanguas 1991; Francisco Martín 1996; Keay 1998; Martins 2006). Suffice it to mention that the critical reappraisals which have been proposed in the last thirty years (e.g., Blagg and Millett 1990: 1-4; Millett 1990; Woolf 1992; Freeman 1997; Millett, Roymans and Slofstra 1995; Keay 2001b; Webster 2001; Mattingly 2006; Revell 2009) are still confronted with simplified and traditional pictures, like those proposed by Blázquez (1989) or Tsirkin (1996).

The most recent updates about the transformations of settlement patterns triggered by the Roman conquest in the Peninsula (in addition to those quoted above, see, e.g., Ariño, Gurt i Esparraguera and Palet 2004; Corsi and Vermeulen 2010), have brought us to share the perplexity of Fear (1996: 273-275) when extending to this case some general considerations expressed by authoritative scholars (see references in Fear 1996: 273-274). It is very difficult to evaluate the mechanism of cultural exchange and (reciprocal?) transmission when we can draw just a small part of the picture, in our case missing so much information about the pre-Roman situation. But, if we have to intend that "to be Roman was a discourse rather than an absolute … based upon a shared idea of being Roman…[that] is less absolute than we might expect today" (Revell 2009: 2), then we can make some considerations on the basis of the datasets collected in *Ammaia*. What is striking here is how the urban layout and the planimetry of its monuments, with their equipment of tools for daily use – the table and kitchen pottery and *instrumentarium domesticum*, even the food supplies and the funerary rites – explicitly qualify themselves as "Roman". Despite the absence of buildings for spectacles, the daily life of the population of *Ammaia* seems to be profoundly inspired by a Roman lifestyle, making it still difficult to individuate local/indigenous characteristics, with the exceptions mentioned above. The citizens of *Ammaia* seem to be deeply involved in this discourse to the point that the impression we get is closer to that of an imposition by Rome of a "cultural matrix" more than an individual choice. The lack of initiative of the local elite – again, affirmed on the basis of an *argumentum ex silentio* – suggests this interpretation.

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[13] This scarcity of public buildings in the British capitals of Roman *civitates* when compared with the "core provinces" of the Empire has been explained by a less-developed social hierarchy (Millett 1990: 137).

This does not mean that we consider the process of cultural change to be fully ascribed to direct Roman influence nor that "it represents the inevitable triumph of superior Roman civilization over inferior native cultural tradition", to use the words of Simon Keay (2001b: 140). Rather that in this aspect we consider the imperial power to be the main agent for the creation of a framework – the town that follows the standards of Roman urbanism – within which a certain lifestyle is promoted.

Possibly, when referring to English language literature about "Romanization", we could present *Ammaia* as a case study where the two main positions: (a) the change in material culture is a reflection of the progressive way in which provincial societies become "less native and more Roman", following to "some extent the imposition of an imperial 'system'" (e.g. Hanson 1997); (b) the local elites are considered the main agent in what is defined as a "bottom-up process", where imperial agency is negligible (Millett 1990: 38), merge into the third one, adopted by scholars like Woolf (1995) and Whittaker (1995), where the "self-Romanization of the elites" is seen as operating in synergy with the imperial agent (Keay 2001b: 122). In this case, while the urban and architectural framework would have been offered by the central authorities, the material culture would have been an expression of individual choices and social behaviours.

Indeed, if we follow the opinion of Edmondson (1990: 152) that urbanization can be a useful index for the extent to which the various parts of the province were affected by Romanization, we should evince that – at the latest in the Augustan age – Rome seems to have encouraged the process of urbanization in the province of *Lusitania* to a great extent. Indeed, the process of Romanization of Iberia was more generally "identified with the spread of Roman towns and the Roman urban type" (Keay 2001b: 118). In traditional scholarship, this process is considered as triggered by the settling in Iberia of Romans and Italics and therefore started immediately after 205 BC, when the Carthaginians were expelled from southern Spain.

Obviously, town planning is the more centralized aspect of the foundation of a new settlement or of the remodelling of an existent one. To better contribute to the discussion of the Romanization of *Lusitania* on the base of the data collected here, we obviously should also address other topics, including preservation of elements of indigenous social relationships, persistence of native languages, worship of indigenous deities (Edmondson 1990: 152-153), onomastics, etc. To limit our observation to the data collected with the survey, discussing the town/country relationship and rate of rural settlements, we can underline how the *suburbium* of *Ammaia* appears to conform significantly to those of "typical" Roman towns.

Still, sadly, we have to admit that we could extend to *Ammaia* the definition used by Louise Revell for *Bilbilis*, as "possibly one of the more unremarkable Roman towns in Spain, with a limited range of public buildings and very few inscriptions, providing a counterpoint to the perceived typicality of other Spanish examples" (Revell 2009: 32).

Abandonment, robbing, reuse and restoration activities

Very interestingly, Pilar Diarte Blasco has recently summarized the different possible "follow-ups" of occupation in urban sectors, distinguishing them in terms of abandonment, persistence and function (Diarte Blasco 2012: 26-32). Abandonment has to do with the rate of socio-economic, cultural and mentality changes. Persistence can be subdivided into: structural (survival of the building or public architectural features but not their original function), spatial (the area has never been abandoned, even if there is no structural persistence) and functional (there may be structural change or not, but original functions are kept). In this sense, we can underline that the area of the Southern Gate seems never to have been spatially abandoned, the Forum complex possibly endured a structural continuity until Late Antiquity, while the Baths likely experienced the longest functional persistence. According to our interpretation (chapter III.3), the so-called *Peristylium* would have been installed in the N corner of the by-then abandoned building located west of the Southern Gate only in modern times, likely in connection with the estate of the Quinta do Deão.

The lack of stratigraphical data from the old excavations, sometimes the total absence of information, renders it difficult to understand the process of abandonment and the dynamics of change of use and destination. The most striking element of rupture of the transitional phases of the classical town is surely the irruption of burials into the living space. Pilar Diarte Blasco registered the presence of burials in the forum in at least 10 of the 38 studied urban centres, but in most cases it is impossible to determine their chronology (Diarte Blasco 2012: 259). Almost all these burials are simple interments, like the one mentioned in the Forum of *Ammaia* (section I.1.a).

The clearest example of robbing activity is that performed at the podium of the temple of the Forum, where all the granite ashlar blocks have been taken away, leaving only the concrete nucleus (section I.1.a). These big granite ashlar blocks were evidently the main goal for the "treasure hunters" who sacked the buildings of the town, as has been proved in the excavations at the Baths, where the wall supporting the terracing of the block was followed by two narrow trenches along its sides just to locate the largest blocks (section II.1.b). Indeed, thanks to the excavations and the topographical survey, we have been able to document several robbing activities, the most evident of which, in addition to the above mentioned, are the robbing of the granite blocks paving the square in front of the Forum temple (section I.2.a) and the devastating trench along the wall delimiting the block of the Baths (section II.2.b). We have no elements to determine the chronology of these activities. A few of them can be placed in Antiquity or the (Early) Middle Ages, considering that it is very likely that most of them were carried out when the village of Marvão was built. Thanks to the testimony of residents and farmers in the area, we can say that the recovery of materials, especially stone, from ancient ruins took place until the second half of the twentieth century. Such is the case of the temple of the Forum, the abandonment of which we framed into phase V, with the stone robbing starting very early (phase VI) and extending well into the contemporary age (section I.2.a). At the Southern Gate the abandonment of the dwellings reoccupying the structures around the towers is attributed to the Medieval period (mid-tenth–fourteenth century). In this sector, parallel with the robbing activities and reuse of materials, there was construction of new structures and dwellings (e.g. the so-called *Peristylium*), which started at the beginning of the modern age and lasted up to the present day.

Ammaia as a case study

At the end of our revision of the old excavations and the re-elaboration of the results from our excavations, and in the light of the study of several categories of finds, expectations (on our side and possibly on the side of our readers and colleagues) that some of the uncertainties remaining from the interpretation of the survey results alone would be cleared, and that the delineation of the historical, social and economic developments in *Ammaia* would become less blurred, might or might not have been met.

Surely, the gaps in our reconstruction are more than the achievements in our understanding but, at this stage of the research, we are confident that what is presented here will contribute not only to the placing of *Ammaia* in the provincial history, but will also offer a key for the interpretation for Roman urbanism and the Romanization process in the *Hispaniae* as a whole.

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